

SEQUENCE LISTING

<110> Milich, David R.
Billaud, Jean-Noel

<120> Hepatitis B Virus Core Proteins as Vaccine Platforms and Methods
of Use Thereof

<130> VACCINE-08820

<160> 256

<170> PatentIn version 3.2

<210> 1

<211> 188

<212> PRT

<213> Woodchuck hepatitis virus

<400> 1

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
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Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp
20 25 30

Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu
50 55 60

Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln
65 70 75 80

Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys
85 90 95

Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln
100 105 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu His Thr Val Ile Arg Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser
145 150 155 160

Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro
165 170 175

Arg Arg Arg Arg Ser Gln Ser Pro Ser Ala Asn Cys
180 185

<210> 2
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<213> Woodchuck hepatitis virus

<400> 2

Arg Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser Pro Arg Arg Arg Thr
1 5 10 15

Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
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Gln Ser Pro Ser Ala Asn Cys
35

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<213> Woodchuck hepatitis virus

<400> 3

Arg Arg Arg Cys
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Arg Arg Arg Arg Cys
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<400> 5

Lys Lys Lys Cys
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<400> 6

Ala Ala Ala Cys
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<210> 7
<211> 23
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<213> Woodchuck hepatitis virus

<400> 7

Ala Ala Gly Gly Ala Arg Ala Ser Arg Ser Pro Ser Gln Ser Pro Ser
1 5 10 15

Gln Ser Pro Ser Ala Asn Cys
20

<210> 8
<211> 21
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<213> Woodchuck hepatitis virus

<400> 8

Ala Ala Gly Gly Ala Arg Ala Ser Arg Ser Gln Ser Pro Ser Gln Ser
1 5 10 15

Pro Ser Ala Asn Cys
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<210> 9
<211> 20
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<213> Woodchuck hepatitis virus

<400> 9

Ala Ala Gly Gly Ala Arg Ala Ser Arg Ser Gln Ser Ser Gln Ser Pro
1 5 10 15

Ser Ala Asn Cys
20

<210> 10
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<212> PRT
<213> Woodchuck hepatitis virus

<400> 10

Ala Ala Gly Gly Ala Arg Ala Ser Arg Ser Gln Ser Ser Gln Ser Ser
1 5 10 15

Ala Asn Cys

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<212> PRT
<213> Woodchuck hepatitis virus

<400> 11

Arg Arg Gly Gly Ala Arg Ala Ser Gln Ser Ala Asn Cys
1 5 10

<210> 12
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<213> Woodchuck hepatitis virus

<400> 12

Ala Arg Gly Gly Ala Arg Ala Ser Gln Ser Ala Asn Cys
1 5 10

<210> 13
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<213> Woodchuck hepatitis virus

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Arg Ala Gly Gly Ala Arg Ala Ser Gln Ser Ala Asn Cys
1 5 10

<210> 14
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<212> PRT
<213> Woodchuck hepatitis virus

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Ala Ala Gly Gly Ala Arg Ala Ser Gln Ser Ala Asn Cys
1 5 10

<210> 15
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<213> Woodchuck hepatitis virus

<400> 15

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Arg Glu Ser
1 5 10 15

Gln Cys

<210> 16
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<213> Woodchuck hepatitis virus

<400> 16

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Pro Ser Ala
1 5 10 15

Asn Cys

<210> 17
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<212> PRT
<213> Woodchuck hepatitis virus

<400> 17

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Ser Ala Asn
1 5 10 15

Cys

<210> 18
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<213> Woodchuck hepatitis virus

<400> 18

Ala Ala Gly Arg Ser Gln Ser Pro Ser Gln Ser Ser Ala Asn Cys
1 5 10 15

<210> 19
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<400> 19

Ala Ala Gly Arg Ser Pro Ser Gln Ser Ser Gln Ser Ser Ala Asn Cys
1 5 10 15

<210> 20
<211> 14
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<213> Woodchuck hepatitis virus

<400> 20

Ala Ala Gly Arg Ser Gln Ser Ser Gln Ser Ser Ala Asn Cys
1 5 10

<210> 21
<211> 187
<212> PRT
<213> Ground squirrel hepatitis virus

<400> 21

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
1 5 10 15

Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp
20 25 30

Thr Ala Ala Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Glu Glu
50 55 60

Leu Thr Arg Leu Ile Thr Trp Met Ser Glu Asn Thr Thr Glu Glu Val
65 70 75 80

Arg Arg Ile Ile Val Asp His Val Asn Asn Thr Trp Gly Leu Lys Val
85 90 95

Arg Gln Thr Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln His
100 105 110

Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro
115 120 125

Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu
130 135 140

His Thr Val Ile Arg Arg Arg Gly Gly Ser Arg Ala Ala Arg Ser Pro
145 150 155 160

Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro Arg
165 170 175

Arg Arg Arg Ser Gln Ser Pro Ala Ser Asn Cys
180 185

<210> 22
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<213> Ground squirrel hepatitis virus

<400> 22

Arg Arg Arg Gly Gly Ser Arg Ala Ala Arg Ser Pro Arg Arg Arg Thr
1 5 10 15

Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
20 25 30

Gln Ser Pro Ala Ser Asn Cys
35

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<213> Ground squirrel hepatitis virus

<400> 23

Ala Ala Gly Gly Ser Arg Ala Ala Arg Ser Pro Ser Gln Ser Pro Ser
1 5 10 15

Gln Ser Pro Ala Ser Asn Cys
20

<210> 24
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<400> 24

Ala Ala Gly Gly Ser Arg Ala Ala Arg Ser Gln Ser Pro Ser Gln Ser
1 5 10 15

Pro Ala Ser Asn Cys
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<210> 25

<211> 20

<212> PRT

<213> Ground squirrel hepatitis virus

<400> 25

Ala Ala Gly Gly Ser Arg Ala Ala Arg Ser Gln Ser Ser Gln Ser Pro
1 5 10 15

Ala Ser Asn Cys
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<210> 26

<211> 19

<212> PRT

<213> Ground squirrel hepatitis virus

<400> 26

Ala Ala Gly Gly Ser Arg Ala Ala Arg Ser Gln Ser Ser Gln Ser Ala
1 5 10 15

Ser Asn Cys

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<211> 14

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<213> Ground squirrel hepatitis virus

<400> 27

Arg Arg Gly Gly Ser Arg Ala Ala Ser Gln Ala Ser Asn Cys
1 5 10

<210> 28

<211> 14

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<213> Ground squirrel hepatitis virus

<400> 28

Ala Arg Gly Gly Ser Arg Ala Ala Ser Gln Ala Ser Asn Cys
1 5 10

<210> 29
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<213> Ground squirrel hepatitis virus

<400> 29

Arg Ala Gly Gly Ser Arg Ala Ala Ser Gln Ala Ser Asn Cys
1 5 10

<210> 30
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<400> 30

Ala Ala Gly Gly Ser Arg Ala Ala Ser Gln Ala Ser Asn Cys
1 5 10

<210> 31
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<400> 31

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Arg Glu Ser
1 5 10 15

Gln Cys

<210> 32
<211> 18
<212> PRT
<213> Ground squirrel hepatitis virus

<400> 32

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Pro Ala Ser
1 5 10 15

Asn Cys

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<213> Ground squirrel hepatitis virus

<400> 33

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Ala Ser Asn
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Cys

<210> 34

<211> 15

<212> PRT

<213> Ground squirrel hepatitis virus

<400> 34

Ala Ala Gly Arg Ser Gln Ser Pro Ser Gln Ser Ala Ser Asn Cys
 1 5 10 15

<210> 35

<211> 16

<212> PRT

<213> Ground squirrel hepatitis virus

<400> 35

Ala Ala Gly Arg Ser Pro Ser Gln Ser Ser Gln Ser Ala Ser Asn Cys
 1 5 10 15

<210> 36

<211> 14

<212> PRT

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<400> 36

Ala Ala Gly Arg Ser Gln Ser Ser Gln Ser Ala Ser Asn Cys
 1 5 10

<210> 37

<211> 567

<212> DNA

<213> Woodchuck hepatitis virus

<400> 37

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gagctaacag gtagggaaca ttgctctccg caccatacag ctattagaca agcttttagta 180

tgctggatg aattaactaa attgatagct tggatgagct ctaacataac ttctgaacaa 240

gtaagaacaa tcattgtaaa tcatgtcaat gatacctggg gacttaaggt gagacaaaagt 300

ttatggtttc atttgcattg tctcactttc ggacaacata cagttcaaga atttttagta 360

agttttggag tatggatcag gactccagct ccatatagac ctcctaattgc acccattctc 420

tcgactttc cgaaacatac agtcattagg agaagaggag gtgcaagagc ttcttaggtcc 480
 cccagaagac gcactccctc tcctcgcagg agaagatctc aatcaccgcg tcgcagacgc 540
 tctcaatctc catctgccaa ctgctga 567

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 <213> Woodchuck hepatitis virus

 <400> 38

 Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
 1 5 10 15

 Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp
 20 25 30

 Thr Ala Thr Ala Leu Tyr Glu Glu Leu Thr Gly Arg Glu His Cys
 35 40 45

 Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu
 50 55 60

 Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln
 65 70 75 80

 Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys
 85 90 95

 Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln
 100 105 110

 His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr
 115 120 125

 Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
 130 135 140

 Glu His Thr Val Ile
 145

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 <212> DNA
 <213> Ground squirrel hepatitis virus

<400> 39
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 gaatttaacag gtagggagca ttgttctcct catcatactg ctattagaca ggccttagtg 180
 tggggaaag aattaactag attaattaca tggatgagtg aaaatacaac agaagaagtt 240
 agaagaatta ttgttcatca tgtcaataat acttggggac ttaaagtaag acagactta 300
 tggtttcatt tatcatgtct tacttttggc caacacacag ttcaagaatt tttggtagt 360
 tttggagtat ggattagaac tccagctcct tatagaccac ctaatgcacc cattttatca 420
 actcttccgg aacatacagt cattaggaga agaggaggtt caagagctgc taggtcccc 480
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 caatctccag cttccaaactg ctga 564

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<400> 40

Met	Asp	Ile	Asp	Pro	Tyr	Lys	Glu	Phe	Gly	Ser	Ser	Tyr	Gln	Leu	Leu
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Asn	Phe	Leu	Pro	Leu	Asp	Phe	Phe	Pro	Asp	Leu	Asn	Ala	Leu	Val	Asp
														20	30

Thr	Ala	Ala	Ala	Leu	Tyr	Glu	Glu	Glu	Leu	Thr	Gly	Arg	Glu	His	Cys
														35	45

Ser	Pro	His	His	Thr	Ala	Ile	Arg	Gln	Ala	Leu	Val	Cys	Trp	Glu	Glu
														50	60

Leu	Thr	Arg	Leu	Ile	Thr	Trp	Met	Ser	Glu	Asn	Thr	Thr	Glu	Glu	Val
														65	80

Arg	Arg	Ile	Ile	Val	Asp	His	Val	Asn	Asn	Thr	Trp	Gly	Leu	Lys	Val
														85	95

Arg	Gln	Thr	Leu	Trp	Phe	His	Leu	Ser	Cys	Leu	Thr	Phe	Gly	Gln	His
														100	110

Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro
 115 120 125

Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu
 130 135 140

His Thr Val Ile
 145

<210> 41
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 <213> Human hepatitis B virus

<400> 41

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
 1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
 20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
 35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
 50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp Pro Ala
 65 70 75 80

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys
 85 90 95

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
 100 105 110

Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
 115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
 130 135 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
 145 150 155 160

Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
165 170 175

Gln Ser Arg Glu Ser Gln Cys
180

<210> 42
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<213> Human hepatitis B virus

<400> 42

Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg
1 5 10 15

Arg Arg Ser Gln Ser Pro Arg Arg Arg Ser Gln Ser Arg Glu Ser
20 25 30

Gln Cys

<210> 43
<211> 18
<212> PRT
<213> Human hepatitis B virus

<400> 43

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Arg Glu Ser
1 5 10 15

Gln Cys

<210> 44
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<212> PRT
<213> Human hepatitis B virus

<400> 44

Ala Ala Gly Arg Ser Gln Ser Pro Ser Gln Ser Arg Glu Ser Gln Cys
1 5 10 15

<210> 45
<211> 15
<212> PRT
<213> Human hepatitis B virus

<400> 45

Ala Ala Gly Arg Ser Gln Ser Ser Gln Ser Arg Glu Ser Gln Cys
1 5 10 15

<210> 46
<211> 14
<212> PRT
<213> Human hepatitis B virus

<400> 46

Ala Ala Gly Arg Ser Gln Ser Ser Gln Ser Glu Ser Gln Cys
1 5 10

<210> 47
<211> 11
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<213> Human hepatitis B virus

<400> 47

Arg Arg Gly Ser Gln Ser Arg Glu Ser Gln Cys
1 5 10

<210> 48
<211> 11
<212> PRT
<213> Human hepatitis B virus

<400> 48

Ala Arg Gly Ser Gln Ser Arg Glu Ser Gln Cys
1 5 10

<210> 49
<211> 11
<212> PRT
<213> Human hepatitis B virus

<400> 49

Arg Ala Gly Ser Gln Ser Arg Glu Ser Gln Cys
1 5 10

<210> 50
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<212> PRT
<213> Human hepatitis B virus

<400> 50

Ala Ala Gly Ser Gln Ser Arg Glu Ser Gln Cys
1 5 10

<210> 51
<211> 18
<212> PRT
<213> Human hepatitis B virus

<400> 51

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Pro Ser Ala
1 5 10 15

Asn Cys

<210> 52
<211> 18
<212> PRT
<213> Human hepatitis B virus

<400> 52

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Arg Glu Ser
1 5 10 15

Gln Cys

<210> 53
<211> 17
<212> PRT
<213> Human hepatitis B virus

<400> 53

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Glu Ser Gln
1 5 10 15

Cys

<210> 54
<211> 15
<212> PRT
<213> Human hepatitis B virus

<400> 54

Ala Ala Gly Arg Ser Gln Ser Pro Ser Gln Ser Glu Ser Gln Cys
1 5 10 15

<210> 55
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 <212> PRT
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 <400> 55

Ala Ala Gly Arg Ser Pro Ser Gln Ser Ser Gln Ser Glu Ser Gln Cys
 1 5 10 15

<210> 56
 <211> 14
 <212> PRT
 <213> Human hepatitis B virus
 <400> 56

Ala Ala Gly Arg Ser Gln Ser Ser Gln Ser Glu Ser Gln Cys
 1 5 10

<210> 57
 <211> 552
 <212> DNA
 <213> Human hepatitis B virus

<400> 57
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 gccttagagt ctcctgagca ttgttcacct caccatactg cactcaggca agcaattctt 180
 tgctgggggg aactaatgac tctagctacc tgggtgggtg ttaatttggc agatccagca 240
 tccagagacc tagtagtcag ttatgtcaac actaatatgg gcctaaagtt caggcaactc 300
 ttgtggtttc acatttcttg tctcactttt ggaagagaaaa ccgttataga gtatgggtg 360
 tcttcggag tgtggattcg cactcctcca gcttatagac caccaaatgc ccctatccta 420
 tcaacacttc cggaaactac tgggtttaga cgacgaggca ggtcccctag aagaagaact 480
 ccotcgcctc gcagacgaag gtctcaatcg ccgcgtcgca gaagatctca atctcgggaa 540
 tctcaatgtt ga 552

<210> 58
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 <212> PRT
 <213> Human hepatitis B virus
 <400> 58

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
 1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
 20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys
85 90 95

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val
145

<210> 59
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 59

Val Ser Phe Gly Val Trp Ile Arg Thr Pro Ala Pro
1 5 10

<210> 60
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 60

Val Ser Phe Gly Val Trp Ile Arg Thr Pro Pro Ala
1 5 10

<210> 61
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 61

Val Cys Trp Asp Glu Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn
1 5 10 15

Ile Thr Ser Glu Gln
20

<210> 62
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 62

Leu Cys Trp Gly Glu Leu Met Thr Leu Ala Thr Trp Val Gly Gly Asn
1 5 10 15

Leu Glu Asp Pro Ile
20

<210> 63
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 63
ggaaaattctt ctcctcgag

19

<210> 64
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 64

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp
20

<210> 65

<211> 18

<212> PRT

<213> Plasmodium vivax

<400> 65

Ala Asn Gly Ala Gly Asn Gln Pro Gly Ala Asn Gly Ala Gly Asp Gln
1 5 10 15

Pro Gly

<210> 66

<211> 18

<212> PRT

<213> Plasmodium vivax

<400> 66

Ala Asn Gly Ala Asp Asn Gln Pro Gly Ala Asn Gly Ala Asp Asp Gln
1 5 10 15

Pro Gly

<210> 67

<211> 22

<212> PRT

<213> Plasmodium vivax

<400> 67

Ala Pro Gly Ala Asn Gln Glu Gly Gly Ala Ala Ala Pro Gly Ala Asn
1 5 10 15

Gln Glu Gly Gly Ala Ala
20

<210> 68

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 68

Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro
1 5 10

<210> 69

<211> 260

<212> PRT

<213> Mus musculus

<400> 69

Met Ile Glu Thr Tyr Ser Gln Pro Ser Pro Arg Ser Val Ala Thr Gly
1 5 10 15

Leu Pro Ala Ser Met Lys Ile Phe Met Tyr Leu Leu Thr Val Phe Leu
20 25 30

Ile Thr Gln Met Ile Gly Ser Val Leu Phe Ala Val Tyr Leu His Arg
35 40 45

Arg Leu Asp Lys Val Glu Glu Val Asn Leu His Glu Asp Phe Val
50 55 60

Phe Ile Lys Lys Leu Lys Arg Cys Asn Lys Gly Glu Gly Ser Leu Ser
65 70 75 80

Leu Leu Asn Cys Glu Glu Met Arg Arg Gln Phe Glu Asp Leu Val Lys
85 90 95

Asp Ile Thr Leu Asn Lys Glu Glu Lys Lys Glu Asn Ser Phe Glu Met
100 105 110

Gln Arg Gly Asp Glu Asp Pro Gln Ile Ala Ala His Val Val Ser Glu
115 120 125

Ala Asn Ser Asn Ala Ala Ser Val Leu Gln Trp Ala Lys Lys Gly Tyr
130 135 140

Tyr Thr Met Lys Ser Asn Leu Val Met Leu Glu Asn Gly Lys Gln Leu
145 150 155 160

Thr Val Lys Arg Glu Gly Leu Tyr Tyr Val Tyr Thr Gln Val Thr Phe
165 170 175

Cys Ser Asn Arg Glu Pro Ser Ser Gln Arg Pro Phe Ile Val Gly Leu
180 185 190

Trp Leu Lys Pro Ser Ser Gly Ser Glu Arg Ile Leu Leu Lys Ala Ala
195 200 205

Asn Thr His Ser Ser Ser Gln Leu Cys Glu Gln Gln Ser Val His Leu
210 215 220

Gly Gly Val Phe Glu Leu Gln Ala Gly Ala Ser Val Phe Val Asn Val
225 230 235 240

Thr Glu Ala Ser Gln Val Ile His Arg Val Gly Phe Ser Ser Phe Gly
245 250 255

Leu Leu Lys Leu
260

<210> 70
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 70

Gly Glu Ile Lys Asn Cys Ser Phe Asn Ile Ser Thr Ser Ile Arg Gly
1 5 10 15

Lys Val Gln Lys Glu Tyr Ala Phe Phe
20 25

<210> 71
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 71

Leu Thr Ser Cys Asn Thr Ser Val Ile Thr Gln Ala Cys Pro Lys Val
1 5 10 15

Ser Phe Glu Pro Ile Pro Ile His Tyr Cys
20 25

<210> 72
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 72

Pro Lys Val Ser Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala
1 5 10 15

Gly Phe Ala Ile Leu Lys Cys Asn Asn
20 25

<210> 73
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 73

Thr His Gly Ile Arg Pro Val Val Ser Thr Gln Leu Leu Leu Asn Gly
1 5 10 15

Ser Leu Ala Glu Glu Glu
20

<210> 74
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 74

Asp Arg Ala Ala Gly Gln Pro Ala Gly Asp Arg Ala Asp Gly Gln Pro
1 5 10 15

Ala Gly

<210> 75
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 75

Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro
1 5 10 15

Asn Ala Asn Pro
20

<210> 76

<211> 23

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 76

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Cys
1 5 10 15

Arg Cys Asn Asp Ser Ser Asp
20

<210> 77

<211> 23

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 77

Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly Ala
1 5 10 15

Arg Ala Asn Asp Ser Ser Asp
20

<210> 78

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 78

Lys Lys Lys Val Thr Ala Gln Glu Leu Asp
1 5 10

<210> 79
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 79

Phe Gly Phe Pro Glu His Leu Leu Val Asp Phe Leu Gln Ser Leu Ser
1 5 10 15

<210> 80
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 80

Phe Tyr Glu Ile Ile Met Asp Ile Glu Gln Asn Asn Val Gln Gly Lys
1 5 10 15

Gln Gly Leu Gln Lys Leu
20

<210> 81
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 81

Met Glu Leu Arg Lys Asn Gly Arg Gln Cys Gly Met Ser Glu Lys Glu
1 5 10 15

Glu Glu

<210> 82
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 82

Leu Glu Glu Lys Lys Gly Asn Tyr Val Val Thr Asp His
1 5 10

<210> 83
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 83

Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val
1 5 10

<210> 84
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 84

Phe Arg His Asp Ser Gly Tyr
1 5

<210> 85
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 85

Arg Ile Lys Gln Ile Gly Met Pro Gly Gly Lys
1 5 10

<210> 86
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 86

Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu
1 5 10

<210> 87
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 87

Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu Trp
1 5 10

<210> 88
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 88

Asp Thr Gly Phe Leu Ala Ala Leu
1 5

<210> 89
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 89

Tyr Cys Phe Thr Pro Ser Pro Val
1 5

<210> 90
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 90

Cys Phe Arg Lys His Pro Glu Ala
1 5

<210> 91
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 91

Glu Ala Thr Tyr Ser Arg Cys Gly
1 5

<210> 92
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 92

His Leu His Gln Asn Ile Val Asp
1 5

<210> 93
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 93

Arg Tyr Asn Arg Asn Ala Val Pro Asn Leu Arg Gly Asp Leu Gln Val
1 5 10 15

Leu Ala Gln Lys Val Ala Arg Thr Leu Phe
20 25

<210> 94
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 94

Thr Ala Val Val His Gln Leu Lys Arg Lys His
1 5 10

<210> 95
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 95

His Leu Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg
1 5 10 15

<210> 96
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 96

Gly Glu Thr Tyr Gln Ser Arg Val Thr His Pro His Leu Pro Arg Ala
1 5 10 15

Leu Met Arg Ser Thr Thr Lys
20

<210> 97
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 97

Gly Arg Glu Arg Arg Pro Arg Leu Ser Asp Arg Pro Gln Leu Pro Tyr
1 5 10 15

Leu Glu Ala

<210> 98
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 98

Asp Pro Pro Pro Pro Asn Pro Asn Asp Pro Pro Pro Pro Asn Pro Asn
1 5 10 15

<210> 99

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 99

Glu Glu Lys Lys Lys Val Thr Ala Gln Glu Leu Asp Glu Glu
1 5 10

<210> 100

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 100

Glu Glu Phe Arg His Asp Ser Gly Tyr Glu Glu
1 5 10

<210> 101

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<400> 101

Glu Glu Arg Ile Lys Gln Ile Gly Met Pro Gly Gly Lys Glu Glu
1 5 10 15

<210> 102

<211> 187

<212> PRT

<213> Arctic ground squirrel hepatitis virus

<400> 102

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
1 5 10 15

Asn Phe Leu Pro Leu Asp Phe Phe Pro Glu Leu Asn Ala Leu Val Asp
20 25 30

Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
 35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Glu Glu
 50 55 60

Leu Thr Arg Leu Ile Ala Trp Met Ser Ala Asn Ile Asn Ser Glu Glu
 65 70 75 80

Val Arg Arg Val Ile Val Ala His Val Asn Asp Thr Trp Gly Leu Lys
 85 90 95

Val Arg Gln Asn Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln
 100 105 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Arg Ile Arg Thr
 115 120 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
 130 135 140

Glu His Thr Val Ile Arg Arg Arg Gly Ser Ala Arg Val Val Arg Ser
 145 150 155 160

Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro
 165 170 175

Arg Arg Arg Pro Gln Ser Pro Ala Ser Asn Cys
 180 185

<210> 103
 <211> 188
 <212> PRT
 <213> Woodchuck hepatitis virus

<400> 103

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
 1 5 10 15

Asn Phe Leu Pro Leu Asp Phe Pro Asp Leu Asn Ala Leu Val Asp
 20 25 30

Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
 35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu
 50 55 60

Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln
 65 70 75 80

Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys
 85 90 95

Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln
 100 105 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr
 115 120 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
 130 135 140

Glu His Thr Val Ile Arg Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser
 145 150 155 160

Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro
 165 170 175

Arg Arg Arg Arg Ser Gln Ser Pro Ser Ala Asn Cys
 180 185

<210> 104
 <211> 188
 <212> PRT
 <213> Woodchuck hepatitis virus

<400> 104

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
 1 5 10 15

Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp
 20 25 30

Thr Ala Thr Ala Leu Tyr Glu Glu Leu Thr Gly Arg Glu His Cys
 35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu
 50 55 60

Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln
 65 70 75 80

Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys
 85 90 95

Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln
 100 105 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr
 115 120 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
 130 135 140

Glu His Thr Val Ile Arg Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser
 145 150 155 160

Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro
 165 170 175

Arg Arg Arg Arg Ser Gln Ser Pro Ser Ala Asn Cys
 180 185

<210> 105
 <211> 187
 <212> PRT
 <213> Woodchuck hepatitis virus

<400> 105

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
 1 5 10 15

Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp
 20 25 30

Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
 35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu
 50 55 60

Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln
 65 70 75 80

Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys
 85 90 95

Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln
 100 105 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Val Val Trp Ile Arg Thr
 115 120 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
 130 135 140

Glu His Thr Val Ile Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser Pro
 145 150 155 160

Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro Arg
 165 170 175

Arg Arg Arg Ser Gln Ser Pro Ser Ala Asn Cys
 180 185

<210> 106
 <211> 188
 <212> PRT
 <213> Woodchuck hepatitis virus
 <400> 106

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
 1 5 10 15

Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp
 20 25 30

Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
 35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu
 50 55 60

Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln
 65 70 75 80

Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys
 85 90 95

Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln
 100 105 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr
 115 120 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
 130 135 140

Glu His Thr Val Ile Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser
 145 150 155 160

Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro
165 170 175

Arg Arg Arg Arg Ser Gln Ser Pro Ser Ala Asn Cys
180 185

<210> 107
<211> 188
<212> PRT
<213> Woodchuck hepatitis virus

<400> 107

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
1 5 10 15

Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp
20 25 30

Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu
50 55 60

Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln
65 70 75 80

Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys
85 90 95

Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln
100 105 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu His Thr Val Ile Arg Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser
145 150 155 160

Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro
165 170 175

Arg Arg Arg Arg Ser Gln Ser Pro Ser Thr Asn Cys
180 185

<210> 108
<211> 187
<212> PRT
<213> Ground squirrel hepatitis virus

<400> 108

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
1 5 10 15

Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp
20 25 30

Thr Ala Ala Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Glu Glu
50 55 60

Leu Thr Arg Leu Ile Thr Trp Met Ser Glu Asn Thr Thr Glu Glu Val
65 70 75 80

Arg Arg Ile Ile Val Asp His Val Asn Asn Thr Trp Gly Leu Lys Val
85 90 95

Arg Gln Thr Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln His
100 105 110

Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro
115 120 125

Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu
130 135 140

His Thr Val Ile Arg Arg Arg Gly Gly Ser Arg Ala Ala Arg Ser Pro
145 150 155 160

Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro Arg
165 170 175

Arg Arg Arg Ser Gln Ser Pro Ala Ser Asn Cys
180 185

<210> 109
<211> 183
<212> PRT
<213> Human hepatitis B virus

<400> 109

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Asp Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys
85 90 95

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Ile Phe Gly Arg
100 105 110

Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
145 150 155 160

Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
165 170 175

Gln Ser Arg Glu Ser Gln Cys
180

<210> 110
<211> 185
<212> PRT
<213> Human hepatitis B virus

<400> 110

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Asn Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Asp Leu Val Val Asn Tyr Val Asn Thr Asn Val Gly Leu Lys
85 90 95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Asp Arg Gly Arg Ser Pro Arg Arg
145 150 155 160

Arg Thr Pro Ser Pro Arg Arg Arg Ser Pro Ser Pro Arg Arg Arg
165 170 175

Arg Ser Gln Ser Arg Glu Ser Gln Cys
180 185

<210> 111
<211> 183
<212> PRT
<213> Human hepatitis B virus

<400> 111

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Ser Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Ile Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Asn Leu Ala Thr Trp Val Gly Ser Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Glu Leu Val Val Ser Tyr Val Asn Val Asn Met Gly Leu Lys
85 90 95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
145 150 155 160

Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
165 170 175

Gln Ser Arg Glu Ser Gln Cys
180

<210> 112

<211> 183

<212> PRT

<213> Human hepatitis B virus

<400> 112

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys
85 90 95

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
145 150 155 160

Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
165 170 175

Gln Ser Arg Glu Ser Gln Cys
180

<210> 113

<211> 183

<212> PRT

<213> Human hepatitis B virus

<400> 113

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ala Ala Leu Tyr Arg Asp Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Asp
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Thr Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Val Gly Leu Lys
85 90 95

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
145 150 155 160

Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
165 170 175

Gln Ser Arg Glu Ser Gln Cys
180

<210> 114

<211> 183

<212> PRT

<213> Human hepatitis B virus

<400> 114

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Ser Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Ile Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Asn Leu Ala Thr Trp Val Gly Ser Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Glu Leu Val Val Ser Tyr Val Asn Val Asn Met Gly Leu Lys
85 90 95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
145 150 155 160

Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
165 170 175

Gln Ser Arg Glu Ser Gln Cys
180

<210> 115

<211> 183

<212> PRT

<213> Chimpanzee hepatitis B virus

<400> 115

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro Asn His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Ser Trp Val Gly Asn Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Glu Gln Val Val Asn Tyr Val Asn Thr Asn Met Gly Leu Lys
85 90 95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
145 150 155 160

Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
165 170 175

Gln Ser Pro Ala Ser Gln Cys
180

<210> 116

<211> 183

<212> PRT

<213> Gibbon hepatitis B virus

<400> 116

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro Asn His Thr Ala Leu Arg Gln Ala Val Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Ser Trp Val Gly Asn Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Glu Leu Val Val Ser Tyr Val Asn Asn Asn Met Gly Leu Lys
85 90 95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
145 150 155 160

Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
165 170 175

Gln Ser Pro Ala Ser Gln Cys
180

<210> 117

<211> 183

<212> PRT

<213> Orangutan hepatitis virus

<400> 117

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro Asn His Thr Ala Leu Arg Gln Ala Val Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Ser Trp Val Gly Asn Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Glu Leu Val Val Asn Tyr Val Asn Asn Asn Met Gly Leu Lys
85 90 95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
145 150 155 160

Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
165 170 175

Gln Ser Pro Ala Ser Gln Cys
180

<210> 118

<211> 182

<212> PRT

<213> Woolly monkey hepatitis virus

<400> 118

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ala Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Ser Asp His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Thr Val Leu Cys Trp Gly Glu
50 55 60

Leu Met Ser Leu Ala Ser Trp Val Gly Thr Asn Leu Glu Asp Pro Ala
65 70 75 80

Ala Arg Glu Leu Val Val Ser Tyr Val Asn Asp Asn Met Gly Leu Lys
85 90 95

Val Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Trp Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Arg Pro Ser Gly Arg Arg Thr Pro
145 150 155 160

Ser Pro Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser Gln
165 170 175

Ser Pro Ala Ser Ser Cys
180

<210> 119

<211> 262

<212> PRT

<213> Duck hepatitis virus

<400> 119

Met Asp Ile Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Lieu Pro
1 5 10 15

Asp Asp Phe Phe Pro Lys Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
20 25 30

Ala Leu Glu Pro Tyr Trp Lys Ser Asp Ser Ile Lys Lys His Val Leu
35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
50 55 60

Gln Gly Met His Glu Ile Ala Glu Ser Leu Arg Ala Val Ile Pro Pro
65 70 75 80

Thr Thr Ala Pro Val Pro Thr Gly Tyr Leu Ile Gln His Glu Glu Ala
85 90 95

Glu Glu Ile Pro Leu Gly Asp Leu Phe Lys His Gln Glu Glu Arg Ile
100 105 110

Val Ser Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Ala His
115 120 125

Leu Lys Ala Tyr Ala Lys Ile Asn Glu Glu Ser Leu Asp Arg Ala Arg
130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ala Asn
145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
165 170 175

Lys Tyr Arg Gly Arg Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
180 185 190

Ile Gln Val Ala Gln Gly Gly Arg Lys Thr Ser Ser Gly Thr Arg Lys
195 200 205

Pro Arg Gly Leu Glu Pro Arg Arg Arg Lys Val Lys Thr Thr Phe Val
210 215 220

Tyr Gly Arg Arg Arg Ser Lys Ser Arg Glu Arg Arg Ala Pro Ser Pro
225 230 235 240

Gln Arg Ala Gly Ser Pro Leu Pro Arg Ser Ser Ser Ser His His Arg
 245 250 255

Ser Pro Ser Pro Arg Lys
 260

<210> 120
 <211> 262
 <212> PRT
 <213> Duck hepatitis virus

<400> 120

Met Asp Ile Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
 1 5 10 15

Asp Asp Phe Phe Pro Lys Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
 20 25 30

Ala Leu Glu Pro Tyr Trp Lys Ser Asp Ser Ile Lys Lys His Val Leu
 35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
 50 55 60

Gln Gly Met His Glu Ile Ala Glu Ser Leu Arg Ala Val Ile Pro Pro
 65 70 75 80

Thr Thr Thr Pro Val Pro Pro Gly Tyr Leu Ile Gln His Glu Glu Ala
 85 90 95

Glu Glu Ile Pro Leu Gly Asp Leu Phe Lys His Gln Glu Glu Arg Ile
 100 105 110

Val Ser Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Ala His
 115 120 125

Leu Lys Ala Tyr Ala Lys Ile Asn Glu Glu Ser Leu Asp Arg Ala Arg
 130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ala Gln
 145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
 165 170 175

Lys Tyr Arg Gly Arg Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
 180 185 190

Ile Gln Val Ala Gln Gly Gly Arg Lys Thr Thr Thr Gly Thr Arg Lys
195 200 205

Pro Arg Gly Leu Glu Pro Arg Arg Arg Lys Val Lys Thr Thr Val Val
210 215 220

Tyr Gly Arg Arg Arg Ser Lys Ser Arg Glu Arg Arg Ala Pro Thr Pro
225 230 235 240

Gln Arg Ala Gly Ser Pro Leu Pro Arg Ser Ser Ser Ser His His Arg
245 250 255

Ser Pro Ser Pro Arg Lys
260

<210> 121
<211> 262
<212> PRT
<213> Duck hepatitis virus

<400> 121

Met Asp Ile Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
1 5 10 15

Asp Asp Phe Phe Pro Lys Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
20 25 30

Ala Leu Glu Pro Tyr Trp Lys Ser Asp Ser Ile Lys Lys His Val Leu
35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
50 55 60

Gln Gly Met His Glu Ile Ala Glu Ser Leu Arg Ala Val Ile Pro Pro
65 70 75 80

Thr Thr Ala Pro Val Pro Thr Gly Tyr Leu Ile Gln His Glu Glu Ala
85 90 95

Glu Glu Ile Pro Leu Gly Asp Leu Phe Lys His Gln Glu Glu Arg Ile
100 105 110

Val Ser Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Ala His
115 120 125

Leu Lys Ala Tyr Ala Lys Ile Asn Glu Glu Ser Leu Asp Arg Ala Arg
130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ala Asn
145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
165 170 175

Lys Tyr Arg Gly Arg Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
180 185 190

Ile Gln Val Ala Gln Gly Gly Arg Lys Thr Ser Ser Gly Thr Arg Lys
195 200 205

Pro Arg Gly Leu Glu Pro Arg Arg Arg Lys Val Lys Thr Thr Val Val
210 215 220

Tyr Gly Arg Arg Arg Ser Lys Ser Arg Asp Arg Arg Ala Pro Ser Pro
225 230 235 240

Gln Arg Ala Gly Ser Pro Leu Pro Arg Ser Ser Ser Ser His His Arg
245 250 255

Ser Pro Ser Pro Arg Lys
260

<210> 122
<211> 262
<212> PRT
<213> Duck hepatitis virus

<400> 122

Met Asp Ile Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
1 5 10 15

Asp Asp Phe Phe Pro Lys Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
20 25 30

Ala Leu Glu Pro Tyr Trp Lys Ser Asp Ser Ile Lys Lys His Val Leu
35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
50 55 60

Gln Gly Met His Glu Ile Ala Glu Ser Leu Arg Ala Val Ile Pro Pro
65 70 75 80

Thr Thr Ala Pro Val Pro Thr Gly Tyr Leu Ile Gln His Glu Glu Ala
85 90 95

Glu Glu Ile Pro Leu Gly Asp Leu Phe Lys His Gln Glu Glu Arg Ile
100 105 110

Val Ser Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Ala His
115 120 125

Leu Lys Ala Tyr Ala Lys Ile Asn Glu Glu Ser Leu Asp Arg Ala Arg
130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ala Asn
145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
165 170 175

Lys Tyr Arg Gly Arg Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
180 185 190

Ile Gln Val Ala Gln Gly Gly Arg Lys Thr Ser Ser Gly Thr Arg Lys
195 200 205

Pro Arg Gly Leu Glu Pro Arg Arg Arg Lys Val Lys Thr Thr Val Val
210 215 220

Tyr Gly Arg Arg Arg Ser Lys Ser Arg Glu Arg Arg Ala Pro Ser Pro
225 230 235 240

Gln Arg Ala Gly Ser Pro Leu Pro Arg Ser Ser Ser Ser His His Arg
245 250 255

Ser Pro Ser Pro Arg Lys
260

<210> 123
<211> 262
<212> PRT
<213> Duck hepatitis virus

<400> 123

Met Asp Ile Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
1 5 10 15

Asp Asp Phe Phe Pro Lys Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
20 25 30

Ala Leu Glu Pro Tyr Trp Lys Ser Asp Ser Ile Lys Lys His Val Leu
35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
50 55 60

Gln Gly Met His Glu Ile Ala Glu Ser Leu Arg Ala Val Ile Pro Pro
65 70 75 80

Thr Thr Ala Pro Val Pro Thr Gly Tyr Leu Ile Gln His Glu Glu Ala
85 90 95

Glu Glu Ile Pro Leu Gly Asp Leu Phe Lys His Gln Glu Glu Arg Ile
100 105 110

Val Ser Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Ala His
115 120 125

Leu Lys Ala Tyr Ala Lys Ile Asn Glu Glu Ser Leu Asp Arg Ala Arg
130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ala Asn
145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
165 170 175

Lys Tyr Arg Gly Arg Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
180 185 190

Ile Gln Ala Ala Gln Gly Gly Arg Lys Thr Ser Ser Gly Thr Arg Lys
195 200 205

Pro Arg Gly Leu Glu Pro Arg Arg Arg Lys Val Lys Thr Thr Val Val
210 215 220

Tyr Gly Arg Arg Arg Ser Lys Ser Arg Glu Arg Arg Ala Pro Ser Pro
225 230 235 240

Gln Arg Ala Gly Ser Pro Leu Pro Arg Ser Ser Ser Ser His His Arg
245 250 255

Ser Pro Ser Pro Arg Lys
260

<210> 124
<211> 262
<212> PRT
<213> Duck hepatitis virus

<400> 124

Met Asp Ile Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
1 5 10 15

Asp Asp Phe Phe Pro Lys Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
20 25 30

Ala Leu Glu Pro Tyr Trp Lys Ser Asp Ser Ile Lys Lys His Val Leu
35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
50 55 60

Gln Gly Met His Glu Ile Ala Glu Ser Leu Arg Ala Val Ile Pro Pro
65 70 75 80

Thr Thr Ala Pro Val Pro Thr Gly Tyr Leu Ile Gln His Glu Glu Ala
85 90 95

Glu Glu Ile Pro Leu Gly Asp Leu Phe Lys His Gln Glu Glu Arg Ile
100 105 110

Val Ser Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Ala His
115 120 125

Leu Lys Ala Tyr Ala Lys Ile Asn Glu Glu Ser Leu Asp Arg Ala Arg
130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ala Asn
145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
165 170 175

Lys Tyr Arg Gly Arg Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
180 185 190

Ile Gln Ala Ala Gln Gly Gly Arg Lys Thr Ser Ser Gly Thr Arg Lys
195 200 205

Pro Arg Gly Leu Glu Pro Arg Arg Arg Lys Val Lys Thr Thr Val Val
210 215 220

Tyr Gly Arg Arg Arg Ser Lys Ser Arg Glu Arg Arg Ala Pro Ser Pro
 225 230 235 240

 Gln Arg Ala Gly Ser Pro Leu Pro Arg Ser Ser Ser Ser His His Arg
 245 250 255

 Ser Pro Ser Pro Arg Lys
 260

 <210> 125
 <211> 262
 <212> PRT
 <213> Ross' goose hepatitis virus

 <400> 125

 Met Asp Ile Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
 1 5 10 15

 Asp Asp Phe Phe Pro Lys Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
 20 25 30

 Ala Leu Glu Pro Tyr Trp Arg Asn Asp Ser Ile Lys Lys His Val Leu
 35 40 45

 Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
 50 55 60

 Gln Gly Met His Glu Ile Ala Glu Ala Leu Arg Ala Ile Ile Pro Ala
 65 70 75 80

 Thr Thr Ala Pro Val Pro Gln Gly Phe Leu Val Gln His Glu Glu Ala
 85 90 95

 Glu Glu Ile Pro Leu Gly Glu Leu Phe Arg Tyr Gln Glu Glu Arg Leu
 100 105 110

 Thr Asn Phe Gln Pro Asp Tyr Pro Val Thr Ala Arg Ile His Ala His
 115 120 125

 Leu Lys Ala Tyr Ala Lys Ile Asn Glu Glu Ser Leu Asp Arg Ala Arg
 130 135 140

 Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Pro Asn
 145 150 155 160

 Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
 165 170 175

Lys Tyr Arg Gly Lys Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
180 185 190

Ile Gln Val Ala Gln Gly Gly Arg Asn Lys Thr Gln Gly Val Arg Lys
195 200 205

Ser Arg Gly Leu Glu Pro Arg Arg Arg Arg Val Lys Thr Thr Ile Val
210 215 220

Tyr Gly Arg Arg Arg Ser Lys Ser Arg Glu Arg Arg Ala Pro Thr Pro
225 230 235 240

Gln Arg Ala Gly Ser Pro Leu Pro Arg Thr Ser Arg Asp His His Arg
245 250 255

Ser Pro Ser Pro Arg Glu
260

<210> 126

<211> 262

<212> PRT

<213> Heron hepatitis virus

<400> 126

Met Asp Val Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
1 5 10 15

Asp Asp Phe Phe Pro Gln Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
20 25 30

Ala Leu Glu Pro Tyr Trp Lys Ala Glu Thr Ile Lys Lys His Val Leu
35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
50 55 60

Gln Gly Met Ser Gln Ile Ala Asp Ala Leu Arg Ala Val Ile Pro Pro
65 70 75 80

Thr Thr Val Pro Val Pro Glu Gly Phe Leu Ile Thr His Ser Glu Ala
85 90 95

Glu Glu Ile Pro Leu Asn Asp Leu Phe Ser Asn Gln Glu Glu Arg Ile
100 105 110

Val Asn Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Thr His
115 120 125

Leu Arg Val Tyr Thr Lys Leu Asn Glu Gln Ala Leu Asp Lys Ala Arg
 130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ala Thr
 145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
 165 170 175

Lys Tyr Arg Gly Lys Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
 180 185 190

Ile Gln Val Ala Gln Gly Gly Arg Asn Gln Thr Lys Gly Thr Arg Lys
 195 200 205

Pro Arg Gly Leu Glu Pro Arg Arg Arg Lys Val Lys Thr Thr Val Val
 210 215 220

Tyr Gly Arg Arg Arg Ser Lys Ser Arg Gly Arg Arg Ser Ser Pro Ser
 225 230 235 240

Gln Arg Ala Gly Ser Pro Leu Pro Arg Asn Arg Gly Asn Gln Thr Arg
 245 250 255

Ser Pro Ser Pro Arg Glu
 260

<210> 127

<211> 564

<212> DNA

<213> Arctic ground squirrel hepatitis virus

<400> 127

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 ttatggtttc acttatcctg tctgactttt gggcaacaca cagtcagga attttttagtc 360
 agctttggag taaggatcag aactccggct ccttatacgc ctcctaattgc acccattctc 420
 tcaactcttc cggaacatac agtcattagg agaagaggaa gtgcaagagt tggtaggtcc 480
 cccagaagac gcactccctc tcctcgcagg agaagatctc aatcaccgcg tcgcaggcct 540
 caatctccag cttccaaactg ctga 564

<210>	128					
<211>	564					
<212>	DNA					
<213> Ground squirrel hepatitis virus						
<400> 128						
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gaattaacag	gtagggagca	ttgttctcct	catcatactg	ctattagaca	ggccttagtg	180
tgttgggaag	aattaactag	attaattaca	tggatgagtg	aaaatacaac	agaagaagtt	240
agaagaatta	ttgttcatca	tgtcaataat	acttggggac	ttaaagtaag	acagacttta	300
tggtttcatt	tatcatgtct	tacttttgg	caacacacag	ttcaagaatt	tttggtagt	360
tttggagtagt	ggattagaac	tccagctcct	tatagaccac	ctaattgcacc	cattttatca	420
actcttccgg	aacatacagt	cattaggaga	agaggaggtt	caagagctgc	taggtcccc	480
cgaagacgca	ctccctctcc	tcgcaggaga	aggtctcaat	caccgcgtcg	cagacgctct	540
caatctccag	cttccaaactg	ctgaa				564
<210> 129						
<211>	567					
<212>	DNA					
<213> Woodchuck hepatitis virus						
<400> 129						
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gaactaacag	gtagggaca	ttgctctccg	caccatacag	ctattagaca	agctttagta	180
tgcgtggatg	aattaactaa	attaatagct	tggatgagct	ctaacataac	ttctgaacaa	240
gttggaaacaa	tcattgtaaa	tcatgtcaat	gatacctggg	gacttaaggt	gagacaaagt	300
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agttttggag	tatggattag	gactccagct	ccatatagac	ctcctaattgc	accattctc	420
tcgactcttc	cggaacatac	agtcattagg	agaagaggag	gtgcaagagc	ttcttaggtcc	480
cccagaagac	gcactccctc	tcctcgcagg	agaagatctc	aatcaccgcg	tcgcagacgc	540
tctcaatctc	catctaccaa	ctgctga				567
<210> 130						
<211>	567					
<212>	DNA					
<213> Woodchuck hepatitis virus						

<400> 130		
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gagctaacag gtagggaca ttgctctccg caccatacag ctattagaca agcttttagta	180	
tgctggatg aattaactaa attgatagct tggatgagct ctaacataac ttctgaacaa	240	
gtaagaacaa tcatacgtaaa tcatacgtaat gatacctggg gacttaaggt gagacaaagt	300	
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tcgactcttc cggaacatac agtcattagg agaagaggag gtgcaagagc ttcttaggtcc	480	
cccagaagac gcactccctc tcctcgcagg agaagatctc aatcaccgcg tcgcagacgc	540	
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<210> 131		
<211> 564		
<212> DNA		
<213> Woodchuck hepatitis virus		
<400> 131		
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ttggacttct ttccctgacctt taatgctttg gtggacactg ctactgcctt gtatgaagaa	120	
gagctaacag gtagggaca ttgctctccg caccatacag ctattagaca agcttttagta	180	
tgctggatg aattaactaa attgatagct tggatgagct ctaacataac ttctgaacaa	240	
gtaagaacaa tcatacgtaaa tcatacgtaat gatacctggg gacttaaggt gagacaaagt	300	
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agttttgttag tatggatcag aactccagct ccatatagac ctccataatgc acccattctc	420	
tcgactcttc cggaacatac agtcattaga agaggaggta caagagcttc taggtcccc	480	
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gagctaacag gtagggaca ttgctctccg caccatacag ctattagaca agcttttagta	180	
tgctggatg aattaactaa attgatagct tggatgagct ctaacataac ttctgaacaa	240	

gtaagaacaa tcatagtaaa tcatagtcaat gatacctggg gacttaaggt gagacaaaagt 300
 ttatggtttc atttgcattg tctcaacttc ggacaacata cagttcaaga atttttagta 360
 agttttggag tatggatcag aactccagct ccatatagac ctcctaattgc acccattctc 420
 tcgactcttc cggaacatac agtcattagg agaagaggag gtgcaagagc ttctaggtcc 480
 cccagaagac gcactccctc tcctcgcagg agaagatctc aatcaccgac tcgcagacgc 540
 tctcaatctc catctgccaa ctgctga 567

<210> 133
 <211> 567
 <212> DNA
 <213> Woodchuck hepatitis virus

<400> 133
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 gaactaacag gtagggaca ttgctctcg caccatacag ctattagaca agcttttagta 180
 tgctggatg aattaactaa attgatagct tggatgagct ctaacataac ttctgaacaa 240
 gtaagaacaa tcattgtaaa tcatagtcaat gatacctggg gacttaaggt gagacaaaagt 300
 ttatggtttc atttgcattg tctcaacttc ggacaacata cagttcaaga atttttagta 360
 agttttggag tatggatcag aactccagct ccatatagac ctcctaattgc acccattctc 420
 tcgactcttc cggaacatac agtcattagg agaagaggag gtgcaagagc ttctaggtcc 480
 cccagaagac gcactccctc tcctcgcagg agaagatctc aatcaccgac tcgcagacgc 540
 tctcaatctc catctgccaa ctgctga 567

<210> 134
 <211> 552
 <212> DNA
 <213> Orangutan hepatitis virus

<400> 134
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 tcggatttct ttccgtctgt cagagatcta ctcgacaccg catcagccct gtatcgggaa 120
 gccttagagt ctccagaaca ttgttccaccc aaccacacag cactcaggca agcagttctg 180
 tgctgggtg agttaatgac tctggcttcc tgggtggta ataatttgggaa agacccagca 240
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 ctgtggtttc acatttcctg tcttactttt ggaagagaaa cagttttaga atatttggtg 360
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tcaacacttc	cgaaaactac	tgttgttaga	cgaagaggca	ggtcccctag	aagaagaact	480
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tcccaatgtt	ag					552
<210> 135						
<211> 549						
<212> DNA						
<213> Woolly monkey hepatitis virus						
<400> 135						
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gctgacttct	ttccttcgt	acgggatttg	ctggacacag	cttctgtct	gtatagagaa	120
gccctggagt	cttccgacca	ctgttcaccc	caccatactg	ccttgaggca	gacggtaactg	180
tgctggggag	aattaatgtc	cttagcttct	tgggtggaa	ctaatttggaa	ggatcctgct	240
gctagagaat	tagtggttag	ctatgtcaat	gacaacatgg	gactgaaggt	gagacaactc	300
ctttggttcc	atatttcctg	tctcacttt	ggtagggaaa	ctgttttggaa	atatctgggt	360
tcttttggg	tgtggatacg	cacacccct	gcatatagac	cacccaatgc	ccctatctta	420
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<212> DNA						
<213> Gibbon hepatitis B virus						
<400> 136						
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gcccttagagt	ctccagaaca	ttgttcacct	aatcatacag	cactcaggca	agctgttttg	180
tgctggggtg	agttgatgac	tctggcttcc	tgggtggca	ataatttggaa	agatccagca	240
tctagggAAC	tagtagtcag	ttatgttaat	aataacatgg	gtctaaaaat	caggcaacta	300
ttgtggtttc	acatttcctg	tcttactttt	ggaagagaaa	ctgtccttga	gtatttagtg	360
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tgctgggggg	aattgatgac	tctagctacc	tgggtgggta	ataatttggaa	agatccagca	240
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<212>	DNA					
<213>	Human hepatitis B virus					
<400>	140					
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ctgtggttc	acatttcctg	tcttactttt	ggaagagaaa	ctgttcttga	gtatttggtg	360
tctttggag	tgtggattcg	cactcctcct	gcttacagac	caccaaattgc	ccctatctta	420
tcaacacttc	cggaaaactac	tgttgttaga	cgacgaggca	ggtcccctag	aagaagaact	480
ccctcgccctc	gcagacgaag	gtctcaatcg	cgcgcgtcgca	gaagatctca	atctcggaa	540
tctcaatgtt	ag					552
<210>	141					
<211>	552					
<212>	DNA					
<213>	Human hepatitis B virus					
<400>	141					
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gccttagagt	ctcctgagca	ttgctcacct	caccatactg	cactcaggca	agcaattctt	180
tgttggggag	acttaatgac	tctagctacc	tgggtgggta	ctaattttaga	agatccagca	240

tctagggacc tagtagtcag ttatgtcaac actaatgtgg gcctaaagtt cagacaatta 300
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 tctttggag tgtggattcg cactcctcca gcttataagac caccaaatgc ccctatccta 420
 tcaacgcttc cggagactac tgttgttaga cgacgaggca ggtcccctag aagaagaact 480
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 tctcaatgtt ag 552

<210> 142
 <211> 552
 <212> DNA
 <213> Human hepatitis B virus

<400> 142
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 gccttagagt ctccggaca ttgttcacct caccatacag cactcaggca agctattctg 180
 tggtgggtg agttgatgaa ttggccacc tgggtggaa gtaatttggaa agacccagca 240
 tccagggaaat tagtagtcag ctatgtcaat gttaatatgg gcctaaaaat cagacaacta 300
 ttgtggtttc atatttcctg tcttactttt ggaagagaaa ctgttcttga gtatttggtg 360
 tctttggag tgtggattcg cactcctccc gttacagac caccaaatgc ccctatctta 420
 tcaacacttc cggaaactac tgttgttaga cgacgaggca ggtcccctag aagaagaact 480
 ccctcgccctc gcagacgaag gtctcaatcg ccgcgtcgca gaagatctca atctcgggaa 540
 tctcaatgtt ag 552

<210> 143
 <211> 786
 <212> DNA
 <213> Ross' goose hepatitis virus

<400> 143
 atggatatac acgcttcaag agcttttagct aatgtatatg atttgcaga tgatttcttt 60
 ccaaagattg atgatttagt tagagatgct aaagatgctt taggcctta ttggagaaat 120
 gatcaataa agaaacatgt tttaattgca actcactttg tggatctcat tgaggatttc 180
 tggcaaacca ctcagggat gcatgaaata gcagaggcac tgagagctat aattcctgcc 240
 actactgctc cagtaacctca gggatttctg gtccaaacacg aagaagctga agagataacct 300
 ttgggtgaac ttttaggta tcaggaagaa agactaacta actttcaacc agattatcca 360
 gttaccgcca gaattcatgc tcacctgaaa gcataatgcaa aaataaatga ggaatcttta 420
 gatagagcta ggagattgct ttgggtggcat tataactgtt tattgtgggg cgagcctaac 480

gttaccaact atatttcgag attaagaact tggatccca cacctgaaaa atacagagga 540
 aaagatgccc caaccattga agcaatcact agaccaatcc aagtggcgca gggaggcaga 600
 aataagactc agggagttag aaaatctcggt ggactcgaac ctaggagaag aagagttaaa 660
 accacaatttgc tctatggag aagacgttca aagtccaggg aaaggagagc ccctacaccc 720
 cagcgtgcgg gctccctct cccgcgtact tctagggacc accacagatc tccctcgcc 780
 agggaa 786

<210> 144
 <211> 789
 <212> DNA
 <213> Heron hepatitis virus

<400> 144
 atggatgtca atgcttcaag agcttttagca aatgtatatg atctgccaga tgatttcttt 60
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 gaaacaataa agaaacatgt tttaattttgtt actcacttttgc tggatttgat tgaggacttc 180
 tggcagacca ctcagggtat gagccaaatttgc acggccccc tccgagcagt aattccaccc 240
 actaccgtac cagtaccggaa gggttttctc attactcata gtgaggcaga agagatcccc 300
 ttgaacgatc tctttcaaa tcaagaggag aggatagtca atttccaaacc tgactatccc 360
 attacagcta gaattcatac ccacttacgt gtttatacta aattgaatga acaagcttttgc 420
 gacaaagctc gcagattgttgc ttgggtggcat tacaatttgc tccctctgggg agaagccact 480
 gttacaaatttgc atatttctcg cctccgtact tggctttcttca ctcccgaaaa atatcgaggc 540
 aaggatgccc caaccattga agcaatcact agaccaatcc aaggatggctca aggaggcaga 600
 aatcaaacta agggaaactag aaaacctcggt ggactcgaac ctagaagacg aaaggtttaaa 660
 accacagtttgc tctatggag aagacgttca aagtcccgag gcaggagatc ctctccatcc 720
 caacgtgcgg gctccctct cccacgtaat cggggaaacc agacacgatc cccctcaccc 780
 agggaaatag 789

<210> 145
 <211> 786
 <212> DNA
 <213> Duck hepatitis virus

<400> 145
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 gactcaataa agaaacatgt tttaatttgc actcattttgc tggatcttgc tgaggattttgc 180
 tggcagacta cgcagggtat gcatgaaatc gctgaatcact taagagcagt aattccaccc 240

accactgctc ctgttcctac tgggtatctc attcagcacg aagaggcaga agagatacca 300
 ttaggtgatt tatttaaaca tcaagaagaa agaatagtca gtttccaacc tgactaccca 360
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 gatcgggcta ggagattgct ttggtggcat tataactgtt tactgtgggg agaagctaac 480
 gttactaatt atatttctcg cttccgtact tgggtgtcaa ctccctgaaaa gtacagaggt 540
 cgagatgccc caaccattga agcaatcact agaccaatcc aagtggctca gggaggcaga 600
 aaaacatctt cgggaactag aaaacctcgt ggactcgaac ctagaagaag aaaagttaaa 660
 accacatgg tctatggag aagacgttca aagtccaggg aaaggagagc cccttcaccc 720
 caacgtgcgg gctccctct cccacgtagt tcgagcagcc accatagatc tccctcgccct 780
 agaaaa 786

<210> 146
 <211> 789
 <212> DNA
 <213> Duck hepatitis virus

<400> 146
 atggatatac atgcttctag agccttagcc aatgtgtatg atctaccaga tgatttcttt 60
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 gattcaataa agaaacatgt tttgatttgc actcaactttg tggatcttat tgaagacttc 180
 tggcagacta cacagggcat gcatgaaata gccgaatcct taagagctgt tatacctccc 240
 actactactc ctgttccacc gggttatctt attcagcacg aagaagctga agagataacct 300
 ttgggagatt tatttaaaca ccaagaagaa aggatagtga gtttccaacc cgactatcca 360
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 gatagggcta ggagattgct ttggtggcat tacaattgtt tactgtgggg agaagctcaa 480
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 agagatgccc cgaccattga agcaatcact agaccaatcc aagtggctca gggaggccga 600
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 accacagttg tctatggag aagacgttca aagtcccgaa aaaggagagc ccctacaccc 720
 caacgtgcgg gctccctct cccacgtagt tcgagcagcc accatagatc tccctcgccct 780
 agaaaaataa 789

<210>	147					
<211>	789					
<212>	DNA					
<213>	Duck hepatitis virus					
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gattcaataa	agaaacatgt	tttaattgca	actcactttg	tggatcttat	tgaagacttt	180
tggcagacta	ctcagggtat	gcatgaaatt	gctgaatcct	taagagctgt	aataccacct	240
acgactgctc	ctgtacctac	tgggtatctc	attcaacacg	aggaagctga	agagatacct	300
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attacagcaa	gaattcatgc	acacctaaaa	gcttatgcta	aaattaatga	ggaatcggtt	420
gatagggcta	ggagattgct	ttggtggcat	tacaactgtt	tactgtgggg	agaagctaac	480
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aaaacatctt	cgggaactag	aaaacctcg	ggactcgaac	ctagaagaag	aaaagttaaa	660
accacagttg	tctatggag	aagacgttca	aagtccaggg	ataggagagc	cccttcaccc	720
caacgtgcgg	gctccctct	cccacgtagt	tcgagcagcc	accatagatc	tccctcgct	780
aggaaataa						789
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<211>	789					
<212>	DNA					
<213>	Duck hepatitis virus					
<400>	148					
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ccaaaaattg	atgatcttgt	aaggatgctg	aaagatgctt	tagaacctta	ttggaaatct	120
gattcaataa	agaaacatgt	tttaattgca	actcacttcg	tggatcttat	tgaagacttc	180
tggcagacta	cacagggtat	gcatgagata	gctgaatcat	taagagcagt	aattccacct	240
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aaaacatctt	cgggaactag	aaaacctcg	ggactcgaac	ctagaagaag	aaaagttaaa	660

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 agaaaataa 789

<210> 149
 <211> 789
 <212> DNA
 <213> Duck hepatitis virus

<400> 149
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 gattcaataa agaaacatgt tttgattgca actcactttg tggatcttat tgaagacttc 180
 tggcagacta ctcagggat gcatgaaatt gctgaatcct taagagcagt aataccacct 240
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 ttaggtgatt tatttaaaca tcaggaagaa agaatagtca gtttcaacc agactatcct 360
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 gatagggcta ggagattgct ttggtggcat tacaactgtt tactgtgggg agaagctaac 480
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 cgtgatgccc caaccattga agcaatcact agaccaatcc aagcggctca gggagggcaga 600
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 accacagttg tctatggag aagacgttca aagtccaggg aaaggagagc cccttcaccc 720
 caacgtgcgg gctccctct cccacgtagt tcgagcagcc accatagatc tccctcgct 780
 agaaaataa 789

<210> 150
 <211> 789
 <212> DNA
 <213> Duck hepatitis virus

<400> 150
 atggatatca atgcttctag agccttagcc aatgtatatg atctgccaga tgatttctt 60
 ccaaaaattg atgatcttgt aaggatgct aaagacgctt tagaacctta ctggaaatct 120
 gattcaataa agaaacatgt tttgattgca actcactttg tggatcttat tgaagacttc 180
 tggcagacta ctcagggat gcatgaaatt gctgaatcct taagagcagt aataccacct 240
 accactgctc ctgtacctac tggatatctc attcaacacg aggaggctga agagatacc 300
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gataggggcta ggagattgct ttgggtggcat tacaactgtt tactgtgggg agaagctaac 480
 gttactaatt acatttctcg gctccgtact tgggtgtcaa ctccggaaaa gtaccgaggc 540
 cgtgatgccc caaccattga agcaatcaact agaccaatcc aagcggctca gggaggcaga 600
 aaaacatctt cgggaactag aaaacctcggt ggactcgaac ctagaagaag aaaagttaaa 660
 accacagttg tctatggag aagacgttca aagtccaggg aaaggagagc cccttcaccc 720
 caacgtgcgg gctccctct cccacgtagt tcgagcagcc accatagatc tccctcgccct 780
 aggaaataa 789

<210> 151
 <211> 262
 <212> PRT
 <213> Sheldgoose hepatitis virus

<400> 151

Met Asp Val Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
 1 5 10 15

Asp Asp Phe Phe Pro Lys Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
 20 25 30

Ala Leu Glu Pro Tyr Trp Arg Ser Glu Ser Ile Lys Lys His Val Leu
 35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
 50 55 60

Gln Gly Met His Glu Ile Ala Glu Ala Leu Arg Ala Val Ile Pro Pro
 65 70 75 80

Thr Thr Thr Pro Val Pro Pro Gly Tyr Leu Ile Gln His Glu Glu Ala
 85 90 95

Glu Glu Ile Pro Leu Gly Asp Leu Phe Lys His Gln Glu Glu Arg Ile
 100 105 110

Val Ser Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Ala His
 115 120 125

Leu Lys Ala Tyr Ala Lys Ile Asn Glu Glu Ser Leu Asp Lys Ala Arg
 130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ala Asn
 145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
165 170 175

Arg Tyr Arg Gly Arg Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
180 185 190

Ile Gln Val Ala Gln Gly Gly Arg Asn Lys Thr Gln Gly Ser Arg Lys
195 200 205

Pro Arg Gly Leu Gln Pro Arg Arg Arg Lys Val Lys Thr Thr Val Val
210 215 220

Tyr Gly Arg Arg Arg Ser Lys Ser Arg Asp Arg Arg Ala Pro Ser Pro
225 230 235 240

Gln Arg Ala Gly Ser Pro Leu Pro Arg Pro Ser Thr Ser His His Arg
245 250 255

Ser Pro Ser Pro Arg Lys
260

<210> 152
<211> 262
<212> PRT
<213> Stork hepatitis virus
<400> 152

Met Asp Val Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
1 5 10 15

Asp Asp Phe Phe Pro Gln Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
20 25 30

Ala Leu Glu Pro Tyr Trp Lys Ala Glu Thr Ile Lys Lys His Val Leu
35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
50 55 60

Gln Gly Met Ser Gln Ile Ala Asp Ala Leu Arg Ala Val Ile Pro Pro
65 70 75 80

Thr Thr Thr Pro Val Pro Asp Gly Tyr Leu Ile Ser His Asn Glu Ala
85 90 95

Gln Glu Leu Pro Leu Asn Asp Leu Phe Val Asn Gln Glu Glu Arg Ile
100 105 110

Val Asn Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Thr His
115 120 125

Leu Arg Val Tyr Thr Lys Leu Asn Glu Gln Ala Leu Asp Lys Ala Arg
130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ser Asn
145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
165 170 175

Lys Tyr Arg Gly Lys Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
180 185 190

Ile Gln Val Ala Gln Gly Ser Arg Asn Gln Thr Lys Gly Val Arg Lys
195 200 205

Pro Arg Gly Leu Glu Pro Arg Arg Arg Lys Val Lys Thr Thr Val Val
210 215 220

Tyr Gly Arg Arg Arg Ser Lys Ser Arg Gly Arg Arg Ser Ser Pro Ser
225 230 235 240

Gln Arg Ala Gly Ser Pro Ile Pro Arg Asn Arg Glu Asn Gln Ser Arg
245 250 255

Ser Ser Ser Pro Arg Glu
260

<210> 153
<211> 38
<212> PRT
<213> Arctic ground squirrel hepatitis virus
<400> 153

Arg Arg Arg Gly Ser Ala Arg Val Val Arg Ser Pro Arg Arg Arg Thr
1 5 10 15

Pro Ser Pro Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Pro Gln
20 25 30

Ser Pro Ala Ser Asn Cys
35

<210> 154
 <211> 149
 <212> PRT
 <213> Arctic ground squirrel hepatitis virus
 <400> 154

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
 1 5 10 15

Asn Phe Leu Pro Leu Asp Phe Phe Pro Glu Leu Asn Ala Leu Val Asp
 20 25 30

Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
 35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Glu Glu
 50 55 60

Leu Thr Arg Leu Ile Ala Trp Met Ser Ala Asn Ile Asn Ser Glu Glu
 65 70 75 80

Val Arg Arg Val Ile Val Ala His Val Asn Asp Thr Trp Gly Leu Lys
 85 90 95

Val Arg Gln Asn Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln
 100 105 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Arg Ile Arg Thr
 115 120 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
 130 135 140

Glu His Thr Val Ile
 145

<210> 155
 <211> 33
 <212> PRT
 <213> Woolly monkey hepatitis virus
 <400> 155

Arg Arg Arg Arg Pro Ser Gly Arg Arg Thr Pro Ser Pro Arg Arg Arg
 1 5 10 15

Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Ala Ser Ser
20 25 30

Cys

<210> 156
<211> 149
<212> PRT
<213> Woolly monkey hepatitis virus

<400> 156

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ala Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Ser Asp His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Thr Val Leu Cys Trp Gly Glu
50 55 60

Leu Met Ser Leu Ala Ser Trp Val Gly Thr Asn Leu Glu Asp Pro Ala
65 70 75 80

Ala Arg Glu Leu Val Val Ser Tyr Val Asn Asp Asn Met Gly Leu Lys
85 90 95

Val Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Trp Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val
145

<210> 157
<211> 34
<212> PRT
<213> Orangutan hepatitis virus

<400> 157

Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg
1 5 10 15

Arg Arg Ser Gln Ser Pro Arg Arg Arg Ser Gln Ser Pro Ala Ser
20 25 30

Gln Cys

<210> 158

<211> 149

<212> PRT

<213> Orangutan hepatitis virus

<400> 158

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro Asn His Thr Ala Leu Arg Gln Ala Val Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Ser Trp Val Gly Asn Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Glu Leu Val Val Asn Tyr Val Asn Asn Asn Met Gly Leu Lys
85 90 95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val
145

<210> 159
<211> 34
<212> PRT
<213> Gibbon hepatitis B virus

<400> 159

Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg
1 5 10 15

Arg Arg Ser Gln Ser Pro Arg Arg Arg Ser Gln Ser Pro Ala Ser
20 25 30

Gln Cys

<210> 160
<211> 149
<212> PRT
<213> Gibbon hepatitis B virus

<400> 160

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro Asn His Thr Ala Leu Arg Gln Ala Val Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Ser Trp Val Gly Asn Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Glu Leu Val Val Ser Tyr Val Asn Asn Asn Met Gly Leu Lys
85 90 95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu Thr Thr Val Val
145

<210> 161
<211> 34
<212> PRT
<213> Chimpanzee hepatitis B virus

<400> 161

Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg
1 5 10 15

Arg Arg Ser Gln Ser Pro Arg Arg Arg Ser Gln Ser Pro Ala Ser
20 25 30

Gln Cys

<210> 162
<211> 149
<212> PRT
<213> Chimpanzee hepatitis B virus

<400> 162

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro Asn His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Ser Trp Val Gly Asn Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Glu Gln Val Val Asn Tyr Val Asn Thr Asn Met Gly Leu Lys
85 90 95

Ile Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Leu Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
 115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
 130 135 140

Glu Thr Thr Val Val
 145

<210> 163
 <211> 67
 <212> PRT
 <213> Duck hepatitis virus

<400> 163

Ala Gln Gly Gly Arg Lys Thr Ser Ser Gly Thr Arg Lys Pro Arg Gly
 1 5 10 15

Leu Glu Pro Arg Arg Arg Lys Val Lys Thr Thr Phe Val Tyr Gly Arg
 20 25 30

Arg Arg Ser Lys Ser Arg Glu Arg Arg Ala Pro Ser Pro Gln Arg Ala
 35 40 45

Gly Ser Pro Leu Pro Arg Ser Ser Ser Ser His His Arg Ser Pro Ser
 50 55 60

Pro Arg Lys
 65

<210> 164
 <211> 195
 <212> PRT
 <213> Duck hepatitis virus

<400> 164

Met Asp Ile Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
 1 5 10 15

Asp Asp Phe Phe Pro Lys Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
 20 25 30

Ala Leu Glu Pro Tyr Trp Lys Ser Asp Ser Ile Lys Lys His Val Leu
 35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
 50 55 60

Gln Gly Met His Glu Ile Ala Glu Ser Leu Arg Ala Val Ile Pro Pro
 65 70 75 80

Thr Thr Ala Pro Val Pro Thr Gly Tyr Leu Ile Gln His Glu Glu Ala
 85 90 95

Glu Glu Ile Pro Leu Gly Asp Leu Phe Lys His Gln Glu Glu Arg Ile
 100 105 110

Val Ser Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Ala His
 115 120 125

Leu Lys Ala Tyr Ala Lys Ile Asn Glu Glu Ser Leu Asp Arg Ala Arg
 130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ala Asn
 145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
 165 170 175

Lys Tyr Arg Gly Arg Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
 180 185 190

Ile Gln Val
 195

<210> 165
 <211> 67
 <212> PRT
 <213> Duck hepatitis virus
 <400> 165

Ala Gln Gly Gly Arg Lys Thr Thr Thr Gly Thr Arg Lys Pro Arg Gly
 1 5 10 15

Leu Glu Pro Arg Arg Arg Lys Val Lys Thr Thr Val Val Tyr Gly Arg
 20 25 30

Arg Arg Ser Lys Ser Arg Glu Arg Arg Ala Pro Thr Pro Gln Arg Ala
 35 40 45

Gly Ser Pro Leu Pro Arg Ser Ser Ser Ser His His Arg Ser Pro Ser
 50 55 60

Pro Arg Lys
 65

<210> 166
<211> 195

<212> PRT

<213> Duck hepatitis virus

<400> 166

Met Asp Ile Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
1 5 10 15

Asp Asp Phe Phe Pro Lys Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
20 25 30

Ala Leu Glu Pro Tyr Trp Lys Ser Asp Ser Ile Lys Lys His Val Leu
35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
50 55 60

Gln Gly Met His Glu Ile Ala Glu Ser Leu Arg Ala Val Ile Pro Pro
65 70 75 80

Thr Thr Thr Pro Val Pro Pro Gly Tyr Leu Ile Gln His Glu Glu Ala
85 90 95

Glu Glu Ile Pro Leu Gly Asp Leu Phe Lys His Gln Glu Glu Arg Ile
100 105 110

Val Ser Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Ala His
115 120 125

Leu Lys Ala Tyr Ala Lys Ile Asn Glu Glu Ser Leu Asp Arg Ala Arg
130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ala Gln
145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
165 170 175

Lys Tyr Arg Gly Arg Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
180 185 190

Ile Gln Val
195

<210> 167
<211> 67
<212> PRT
<213> Duck hepatitis virus

<400> 167

Ala Gln Gly Gly Arg Lys Thr Ser Ser Gly Thr Arg Lys Pro Arg Gly
1 5 10 15

Leu Glu Pro Arg Arg Lys Val Lys Thr Thr Val Val Tyr Gly Arg
20 25 30

Arg Arg Ser Lys Ser Arg Asp Arg Arg Ala Pro Ser Pro Gln Arg Ala
35 40 45

Gly Ser Pro Leu Pro Arg Ser Ser Ser Ser His His Arg Ser Pro Ser
50 55 60

Pro Arg Lys
65

<210> 168
<211> 195
<212> PRT
<213> Duck hepatitis virus

<400> 168

Met Asp Ile Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
1 5 10 15

Asp Asp Phe Phe Pro Lys Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
20 25 30

Ala Leu Glu Pro Tyr Trp Lys Ser Asp Ser Ile Lys Lys His Val Leu
35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
50 55 60

Gln Gly Met His Glu Ile Ala Glu Ser Leu Arg Ala Val Ile Pro Pro
65 70 75 80

Thr Thr Ala Pro Val Pro Thr Gly Tyr Leu Ile Gln His Glu Glu Ala
85 90 95

Glu Glu Ile Pro Leu Gly Asp Leu Phe Lys His Gln Glu Glu Arg Ile
100 105 110

Val Ser Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Ala His
115 120 125

Leu Lys Ala Tyr Ala Lys Ile Asn Glu Glu Ser Leu Asp Arg Ala Arg
130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ala Asn
145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
165 170 175

Lys Tyr Arg Gly Arg Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
180 185 190

Ile Gln Val
195

<210> 169

<211> 67

<212> PRT

<213> Duck hepatitis virus

<400> 169

Ala Gln Gly Gly Arg Lys Thr Ser Ser Gly Thr Arg Lys Pro Arg Gly
1 5 10 15

Leu Glu Pro Arg Arg Arg Lys Val Lys Thr Thr Val Val Tyr Gly Arg
20 25 30

Arg Arg Ser Lys Ser Arg Glu Arg Arg Ala Pro Ser Pro Gln Arg Ala
35 40 45

Gly Ser Pro Leu Pro Arg Ser Ser Ser Ser His His Arg Ser Pro Ser
50 55 60

Pro Arg Lys
65

<210> 170

<211> 195

<212> PRT

<213> Duck hepatitis virus

<400> 170

Met Asp Ile Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
1 5 10 15

Asp Asp Phe Phe Pro Lys Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
20 25 30

Ala Leu Glu Pro Tyr Trp Lys Ser Asp Ser Ile Lys Lys His Val Leu
35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
50 55 60

Gln Gly Met His Glu Ile Ala Glu Ser Leu Arg Ala Val Ile Pro Pro
65 70 75 80

Thr Thr Ala Pro Val Pro Thr Gly Tyr Leu Ile Gln His Glu Glu Ala
85 90 95

Glu Glu Ile Pro Leu Gly Asp Leu Phe Lys His Gln Glu Glu Arg Ile
100 105 110

Val Ser Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Ala His
115 120 125

Leu Lys Ala Tyr Ala Lys Ile Asn Glu Glu Ser Leu Asp Arg Ala Arg
130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ala Asn
145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
165 170 175

Lys Tyr Arg Gly Arg Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
180 185 190

Ile Gln Val
195

<210> 171

<211> 67

<212> PRT

<213> Duck hepatitis virus

<400> 171

Ala Gln Gly Gly Arg Lys Thr Ser Ser Gly Thr Arg Lys Pro Arg Gly
1 5 10 15

Leu Glu Pro Arg Arg Lys Val Lys Thr Thr Val Val Tyr Gly Arg
20 25 30

Arg Arg Ser Lys Ser Arg Glu Arg Arg Ala Pro Ser Pro Gln Arg Ala
35 40 45

Gly Ser Pro Leu Pro Arg Ser Ser Ser Ser His His Arg Ser Pro Ser
50 55 60

Pro Arg Lys
65

<210> 172

<211> 195

<212> PRT

<213> Duck hepatitis virus

<400> 172

Met Asp Ile Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
1 5 10 15

Asp Asp Phe Phe Pro Lys Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
20 25 30

Ala Leu Glu Pro Tyr Trp Lys Ser Asp Ser Ile Lys Lys His Val Leu
35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
50 55 60

Gln Gly Met His Glu Ile Ala Glu Ser Leu Arg Ala Val Ile Pro Pro
65 70 75 80

Thr Thr Ala Pro Val Pro Thr Gly Tyr Leu Ile Gln His Glu Glu Ala
85 90 95

Glu Glu Ile Pro Leu Gly Asp Leu Phe Lys His Gln Glu Glu Arg Ile
100 105 110

Val Ser Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Ala His
115 120 125

Leu Lys Ala Tyr Ala Lys Ile Asn Glu Glu Ser Leu Asp Arg Ala Arg
 130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ala Asn
 145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
 165 170 175

Lys Tyr Arg Gly Arg Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
 180 185 190

Ile Gln Ala
 195

<210> 173
 <211> 67
 <212> PRT
 <213> Duck hepatitis virus
 <400> 173

Ala Gln Gly Gly Arg Lys Thr Ser Ser Gly Thr Arg Lys Pro Arg Gly
 1 5 10 15

Leu Glu Pro Arg Arg Arg Lys Val Lys Thr Thr Val Val Tyr Gly Arg
 20 25 30

Arg Arg Ser Lys Ser Arg Glu Arg Arg Ala Pro Ser Pro Gln Arg Ala
 35 40 45

Gly Ser Pro Leu Pro Arg Ser Ser Ser Ser His His Arg Ser Pro Ser
 50 55 60

Pro Arg Lys
 65

<210> 174
 <211> 195
 <212> PRT
 <213> Duck hepatitis virus
 <400> 174

Met Asp Ile Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
 1 5 10 15

Asp Asp Phe Phe Pro Lys Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
 20 25 30

Ala Leu Glu Pro Tyr Trp Lys Ser Asp Ser Ile Lys Lys His Val Leu
 35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
 50 55 60

Gln Gly Met His Glu Ile Ala Glu Ser Leu Arg Ala Val Ile Pro Pro
 65 70 75 80

Thr Thr Ala Pro Val Pro Thr Gly Tyr Leu Ile Gln His Glu Glu Ala
 85 90 95

Glu Glu Ile Pro Leu Gly Asp Leu Phe Lys His Gln Glu Glu Arg Ile
 100 105 110

Val Ser Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Ala His
 115 120 125

Leu Lys Ala Tyr Ala Lys Ile Asn Glu Glu Ser Leu Asp Arg Ala Arg
 130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ala Asn
 145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
 165 170 175

Lys Tyr Arg Gly Arg Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
 180 185 190

Ile Gln Ala
 195

<210> 175
 <211> 67
 <212> PRT
 <213> Ross' goose hepatitis virus
 <400> 175

Ala Gln Gly Gly Arg Asn Lys Thr Gln Gly Val Arg Lys Ser Arg Gly
 1 5 10 15

Leu Glu Pro Arg Arg Arg Arg Val Lys Thr Thr Ile Val Tyr Gly Arg
 20 25 30

Arg Arg Ser Lys Ser Arg Glu Arg Arg Ala Pro Thr Pro Gln Arg Ala
 35 40 45

Gly Ser Pro Leu Pro Arg Thr Ser Arg Asp His His Arg Ser Pro Ser
 50 55 60

Pro Arg Glu
 65

<210> 176
 <211> 195
 <212> PRT
 <213> Ross' goose hepatitis virus

<400> 176

Met Asp Ile Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
 1 5 10 15

Asp Asp Phe Phe Pro Lys Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
 20 25 30

Ala Leu Glu Pro Tyr Trp Arg Asn Asp Ser Ile Lys Lys His Val Leu
 35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
 50 55 60

Gln Gly Met His Glu Ile Ala Glu Ala Leu Arg Ala Ile Ile Pro Ala
 65 70 75 80

Thr Thr Ala Pro Val Pro Gln Gly Phe Leu Val Gln His Glu Glu Ala
 85 90 95

Glu Glu Ile Pro Leu Gly Glu Leu Phe Arg Tyr Gln Glu Glu Arg Leu
 100 105 110

Thr Asn Phe Gln Pro Asp Tyr Pro Val Thr Ala Arg Ile His Ala His
 115 120 125

Leu Lys Ala Tyr Ala Lys Ile Asn Glu Glu Ser Leu Asp Arg Ala Arg
 130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Pro Asn
 145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
 165 170 175

Lys Tyr Arg Gly Lys Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
180 185 190

Ile Gln Val
195

<210> 177
<211> 67
<212> PRT
<213> Sheldgoose hepatitis virus
<400> 177

Ala Gln Gly Gly Arg Asn Lys Thr Gln Gly Ser Arg Lys Pro Arg Gly
1 5 10 15

Leu Gln Pro Arg Arg Arg Lys Val Lys Thr Thr Val Val Tyr Gly Arg
20 25 30

Arg Arg Ser Lys Ser Arg Asp Arg Arg Ala Pro Ser Pro Gln Arg Ala
35 40 45

Gly Ser Pro Leu Pro Arg Pro Ser Thr Ser His His Arg Ser Pro Ser
50 55 60

Pro Arg Lys
65

<210> 178
<211> 195
<212> PRT
<213> Sheldgoose hepatitis virus
<400> 178

Met Asp Val Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
1 5 10 15

Asp Asp Phe Phe Pro Lys Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
20 25 30

Ala Leu Glu Pro Tyr Trp Arg Ser Glu Ser Ile Lys Lys His Val Leu
35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
50 55 60

Gln Gly Met His Glu Ile Ala Glu Ala Leu Arg Ala Val Ile Pro Pro
65 70 75 80

Thr Thr Thr Pro Val Pro Pro Gly Tyr Leu Ile Gln His Glu Glu Ala
85 90 95

Glu Glu Ile Pro Leu Gly Asp Leu Phe Lys His Gln Glu Glu Arg Ile
100 105 110

Val Ser Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Ala His
115 120 125

Leu Lys Ala Tyr Ala Lys Ile Asn Glu Glu Ser Leu Asp Lys Ala Arg
130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ala Asn
145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
165 170 175

Arg Tyr Arg Gly Arg Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
180 185 190

Ile Gln Val
195

<210> 179
<211> 67
<212> PRT
<213> Heron hepatitis virus

<400> 179

Ala Gln Gly Gly Arg Asn Gln Thr Lys Gly Thr Arg Lys Pro Arg Gly
1 5 10 15

Leu Glu Pro Arg Arg Arg Lys Val Lys Thr Thr Val Val Tyr Gly Arg
20 25 30

Arg Arg Ser Lys Ser Arg Gly Arg Arg Ser Ser Pro Ser Gln Arg Ala
35 40 45

Gly Ser Pro Leu Pro Arg Asn Arg Gly Asn Gln Thr Arg Ser Pro Ser
50 55 60

Pro Arg Glu
65

<210> 180
 <211> 195
 <212> PRT
 <213> Heron hepatitis virus
 <400> 180

Met	Asp	Val	Asn	Ala	Ser	Arg	Ala	Leu	Ala	Asn	Val	Tyr	Asp	Leu	Pro
1															15
				5					10						

Asp	Asp	Phe	Phe	Pro	Gln	Ile	Asp	Asp	Leu	Val	Arg	Asp	Ala	Lys	Asp
															30
					20				25						

Ala	Leu	Glu	Pro	Tyr	Trp	Lys	Ala	Glu	Thr	Ile	Lys	Lys	His	Val	Leu
						35		40				45			

Ile	Ala	Thr	His	Phe	Val	Asp	Leu	Ile	Glu	Asp	Phe	Trp	Gln	Thr	Thr
					50		55				60				

Gln	Gly	Met	Ser	Gln	Ile	Ala	Asp	Ala	Leu	Arg	Ala	Val	Ile	Pro	Pro
															80
						65		70		75					

Thr	Thr	Val	Pro	Val	Pro	Glu	Gly	Phe	Leu	Ile	Thr	His	Ser	Glu	Ala
					85				90				95		

Glu	Glu	Ile	Pro	Leu	Asn	Asp	Leu	Phe	Ser	Asn	Gln	Glu	Glu	Arg	Ile
															110
					100			105							

Val	Asn	Phe	Gln	Pro	Asp	Tyr	Pro	Ile	Thr	Ala	Arg	Ile	His	Thr	His
					115			120				125			

Leu	Arg	Val	Tyr	Thr	Lys	Leu	Asn	Glu	Gln	Ala	Leu	Asp	Lys	Ala	Arg
					130		135				140				

Arg	Leu	Leu	Trp	Trp	His	Tyr	Asn	Cys	Leu	Leu	Trp	Gly	Glu	Ala	Thr
															160
					145		150			155					

Val	Thr	Asn	Tyr	Ile	Ser	Arg	Leu	Arg	Thr	Trp	Leu	Ser	Thr	Pro	Glu
					165			170				175			

Lys	Tyr	Arg	Gly	Lys	Asp	Ala	Pro	Thr	Ile	Glu	Ala	Ile	Thr	Arg	Pro
					180			185				190			

Ile	Gln	Val													
		195													

<210> 181
<211> 67
<212> PRT
<213> Stork hepatitis virus

<400> 181

Ala Gln Gly Ser Arg Asn Gln Thr Lys Gly Val Arg Lys Pro Arg Gly
1 5 10 15

Leu Glu Pro Arg Arg Lys Val Lys Thr Thr Val Val Tyr Gly Arg
20 25 30

Arg Arg Ser Lys Ser Arg Gly Arg Arg Ser Ser Pro Ser Gln Arg Ala
35 40 45

Gly Ser Pro Ile Pro Arg Asn Arg Glu Asn Gln Ser Arg Ser Ser Ser
50 55 60

Pro Arg Glu
65

<210> 182
<211> 195
<212> PRT
<213> Stork hepatitis virus

<400> 182

Met Asp Val Asn Ala Ser Arg Ala Leu Ala Asn Val Tyr Asp Leu Pro
1 5 10 15

Asp Asp Phe Phe Pro Gln Ile Asp Asp Leu Val Arg Asp Ala Lys Asp
20 25 30

Ala Leu Glu Pro Tyr Trp Lys Ala Glu Thr Ile Lys Lys His Val Leu
35 40 45

Ile Ala Thr His Phe Val Asp Leu Ile Glu Asp Phe Trp Gln Thr Thr
50 55 60

Gln Gly Met Ser Gln Ile Ala Asp Ala Leu Arg Ala Val Ile Pro Pro
65 70 75 80

Thr Thr Thr Pro Val Pro Asp Gly Tyr Leu Ile Ser His Asn Glu Ala
85 90 95

Gln Glu Leu Pro Leu Asn Asp Leu Phe Val Asn Gln Glu Glu Arg Ile
100 105 110

Val Asn Phe Gln Pro Asp Tyr Pro Ile Thr Ala Arg Ile His Thr His
115 120 125

Leu Arg Val Tyr Thr Lys Leu Asn Glu Gln Ala Leu Asp Lys Ala Arg
130 135 140

Arg Leu Leu Trp Trp His Tyr Asn Cys Leu Leu Trp Gly Glu Ser Asn
145 150 155 160

Val Thr Asn Tyr Ile Ser Arg Leu Arg Thr Trp Leu Ser Thr Pro Glu
165 170 175

Lys Tyr Arg Gly Lys Asp Ala Pro Thr Ile Glu Ala Ile Thr Arg Pro
180 185 190

Ile Gln Val
195

<210> 183
<211> 22
<212> PRT
<213> Arctic ground squirrel hepatitis virus

<400> 183

Ala Ala Gly Ser Ala Arg Val Val Arg Ser Pro Ser Gln Ser Pro Gln
1 5 10 15

Ser Pro Ala Ser Asn Cys
20

<210> 184
<211> 21
<212> PRT
<213> Arctic ground squirrel hepatitis virus

<400> 184

Ala Ala Gly Ser Ala Arg Val Val Arg Ser Ser Gln Ser Pro Gln Ser
1 5 10 15

Pro Ala Ser Asn Cys
20

<210> 185
<211> 20
<212> PRT
<213> Arctic ground squirrel hepatitis virus
<400> 185

Ala Ala Gly Ser Ala Arg Val Val Arg Ser Ser Gln Ser Gln Ser Pro
1 5 10 15

Ala Ser Asn Cys
20

<210> 186
<211> 19
<212> PRT
<213> Arctic ground squirrel hepatitis virus
<400> 186

Ala Ala Gly Ser Ala Arg Val Val Arg Ser Ser Gln Ser Gln Ser Ala
1 5 10 15

Ser Asn Cys

<210> 187
<211> 14
<212> PRT
<213> Arctic ground squirrel hepatitis virus
<400> 187

Arg Arg Gly Ser Ala Arg Val Val Ser Gln Ala Ser Asn Cys
1 5 10

<210> 188
<211> 14
<212> PRT
<213> Arctic ground squirrel hepatitis virus
<400> 188

Ala Arg Gly Ser Ala Arg Val Val Ser Gln Ala Ser Asn Cys
1 5 10

<210> 189
<211> 14
<212> PRT
<213> Arctic ground squirrel hepatitis virus
<400> 189

Arg Ala Gly Ser Ala Arg Val Val Ser Gln Ala Ser Asn Cys
1 5 10

<210> 190
<211> 14
<212> PRT
<213> Arctic ground squirrel hepatitis virus
<400> 190

Ala Ala Gly Ser Ala Arg Val Val Ser Gln Ala Ser Asn Cys
1 5 10

<210> 191
<211> 17
<212> PRT
<213> Arctic ground squirrel hepatitis virus
<400> 191

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Gln Ser Arg Glu Ser Gln
1 5 10 15

Cys

<210> 192
<211> 17
<212> PRT
<213> Arctic ground squirrel hepatitis virus
<400> 192

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Gln Ser Pro Ala Ser Asn
1 5 10 15

Cys

<210> 193
<211> 16
<212> PRT
<213> Arctic ground squirrel hepatitis virus
<400> 193

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Gln Ser Ala Ser Asn Cys
1 5 10 15

<210> 194
<211> 14
<212> PRT
<213> Arctic ground squirrel hepatitis virus
<400> 194

Ala Ala Gly Arg Ser Gln Ser Pro Gln Ser Ala Ser Asn Cys
1 5 10

<210> 195
<211> 15
<212> PRT
<213> Arctic ground squirrel hepatitis virus
<400> 195

Ala Ala Gly Arg Ser Pro Ser Gln Ser Gln Ser Ala Ser Asn Cys
1 5 10 15

<210> 196
<211> 13
<212> PRT
<213> Arctic ground squirrel hepatitis virus
<400> 196

Ala Ala Gly Arg Ser Gln Ser Gln Ser Ala Ser Asn Cys
1 5 10

<210> 197
<211> 18
<212> PRT
<213> Woolly monkey hepatitis virus
<400> 197

Ala Ala Arg Pro Ser Pro Ser Gln Ser Pro Ser Gln Ser Pro Ala Ser
1 5 10 15

Ser Cys

<210> 198
<211> 16
<212> PRT
<213> Woolly monkey hepatitis virus
<400> 198

Ala Ala Arg Pro Ser Gln Ser Pro Ser Gln Ser Pro Ala Ser Ser Cys
1 5 10 15

<210> 199
<211> 15
<212> PRT
<213> Woolly monkey hepatitis virus
<400> 199

Ala Ala Arg Pro Ser Gln Ser Ser Gln Ser Pro Ala Ser Ser Cys
1 5 10 15

<210> 200
<211> 14
<212> PRT
<213> Woolly monkey hepatitis virus

<400> 200

Ala Ala Arg Pro Ser Gln Ser Ser Gln Ser Ala Ser Ser Cys
1 5 10

<210> 201
<211> 13
<212> PRT
<213> Woolly monkey hepatitis virus

<400> 201

Arg Arg Gly Ser Gln Ser Arg Arg Ser Gln Ser Ser Cys
1 5 10

<210> 202
<211> 13
<212> PRT
<213> Woolly monkey hepatitis virus

<400> 202

Ala Arg Gly Ser Gln Ser Arg Arg Ser Gln Ser Ser Cys
1 5 10

<210> 203
<211> 13
<212> PRT
<213> Woolly monkey hepatitis virus

<400> 203

Arg Ala Gly Ser Gln Ser Arg Arg Ser Gln Ser Ser Cys
1 5 10

<210> 204
<211> 13
<212> PRT
<213> Woolly monkey hepatitis virus

<400> 204

Ala Ala Gly Ser Gln Ser Arg Arg Ser Gln Ser Ser Cys
1 5 10

<210> 205
<211> 18
<212> PRT
<213> Woolly monkey hepatitis virus
<400> 205

Ala Ala Arg Arg Arg Pro Ser Gln Ser Pro Ser Gln Ser Pro Ala Ser
1 5 10 15

Ser Cys

<210> 206
<211> 17
<212> PRT
<213> Woolly monkey hepatitis virus
<400> 206

Ala Ala Arg Arg Arg Pro Ser Gln Ser Pro Ser Gln Ser Ala Ser Ser
1 5 10 15

Cys

<210> 207
<211> 16
<212> PRT
<213> Woolly monkey hepatitis virus
<400> 207

Ala Ala Arg Arg Arg Pro Ser Gln Ser Pro Ser Gln Ser Ser Ser Cys
1 5 10 15

<210> 208
<211> 14
<212> PRT
<213> Woolly monkey hepatitis virus
<400> 208

Ala Ala Arg Arg Ser Gln Ser Pro Ser Gln Ser Ser Ser Cys
1 5 10

<210> 209
<211> 15
<212> PRT
<213> Woolly monkey hepatitis virus
<400> 209

Ala Ala Arg Arg Ser Pro Ser Gln Ser Ser Gln Ser Ser Ser Cys
1 5 10 15

<210> 210
<211> 13
<212> PRT
<213> Woolly monkey hepatitis virus

<400> 210

Ala Ala Arg Arg Ser Gln Ser Ser Gln Ser Ser Cys
1 5 10

<210> 211
<211> 18
<212> PRT
<213> Orangutan hepatitis virus

<400> 211

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Pro Ala Ser
1 5 10 15

Gln Cys

<210> 212
<211> 16
<212> PRT
<213> Orangutan hepatitis virus

<400> 212

Ala Ala Gly Arg Ser Gln Ser Pro Ser Gln Ser Pro Ala Ser Gln Cys
1 5 10 15

<210> 213
<211> 15
<212> PRT
<213> Orangutan hepatitis virus

<400> 213

Ala Ala Gly Arg Ser Gln Ser Ser Gln Ser Pro Ala Ser Gln Cys
1 5 10 15

<210> 214
<211> 14
<212> PRT
<213> Orangutan hepatitis virus

<400> 214

Ala Ala Gly Arg Ser Gln Ser Ser Gln Ser Ala Ser Gln Cys
1 5 10

<210> 215
<211> 11
<212> PRT
<213> Orangutan hepatitis virus

<400> 215

Arg Arg Gly Ser Gln Ser Pro Ala Ser Gln Cys
1 5 10

<210> 216
<211> 11
<212> PRT
<213> Orangutan hepatitis virus

<400> 216

Ala Arg Gly Ser Gln Ser Pro Ala Ser Gln Cys
1 5 10

<210> 217
<211> 11
<212> PRT
<213> Orangutan hepatitis virus

<400> 217

Arg Ala Gly Ser Gln Ser Pro Ala Ser Gln Cys
1 5 10

<210> 218
<211> 11
<212> PRT
<213> Orangutan hepatitis virus

<400> 218

Ala Ala Gly Ser Gln Ser Pro Ala Ser Gln Cys
1 5 10

<210> 219
<211> 18
<212> PRT
<213> Orangutan hepatitis virus

<400> 219

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Pro Ala Ser
1 5 10 15

Gln Cys

<210> 220
<211> 17
<212> PRT
<213> Orangutan hepatitis virus

<400> 220

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Ala Ser Gln
1 5 10 15

Cys

<210> 221
<211> 16
<212> PRT
<213> Orangutan hepatitis virus

<400> 221

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Ser Gln Cys
1 5 10 15

<210> 222
<211> 15
<212> PRT
<213> Orangutan hepatitis virus

<400> 222

Ala Ala Gly Arg Ser Gln Ser Pro Ser Gln Ser Ala Ser Gln Cys
1 5 10 15

<210> 223
<211> 16
<212> PRT
<213> Orangutan hepatitis virus

<400> 223

Ala Ala Gly Arg Ser Pro Ser Gln Ser Ser Gln Ser Ala Ser Gln Cys
1 5 10 15

<210> 224
<211> 14
<212> PRT
<213> Orangutan hepatitis virus

<400> 224

Ala Ala Gly Arg Ser Gln Ser Ser Gln Ser Ala Ser Gln Cys
1 5 10

<210> 225
<211> 23
<212> PRT
<213> Duck hepatitis virus

<400> 225

Ala Ala Gly Gly Glu Arg Gly Val Arg Ser Pro Ser Gln Ser Pro Ser
1 5 10 15

Arg Ser Pro Ser Pro Arg Lys
20

<210> 226
<211> 21
<212> PRT
<213> Duck hepatitis virus

<400> 226

Ala Ala Gly Gly Glu Arg Gly Val Arg Ser Gln Ser Pro Ser Arg Ser
1 5 10 15

Pro Ser Pro Arg Lys
20

<210> 227
<211> 20
<212> PRT
<213> Duck hepatitis virus

<400> 227

Ala Ala Gly Gly Glu Arg Gly Val Arg Ser Gln Ser Ser Arg Ser Pro
1 5 10 15

Ser Pro Arg Lys
20

<210> 228
<211> 19
<212> PRT
<213> Duck hepatitis virus

<400> 228

Ala Ala Gly Gly Glu Arg Gly Val Arg Ser Gln Ser Ser Arg Ser Ser
1 5 10 15

Pro Arg Lys

<210> 229
<211> 15
<212> PRT
<213> Duck hepatitis virus

<400> 229

Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser Pro Ser Pro Arg Lys
1 5 10 15

<210> 230
<211> 15
<212> PRT
<213> Duck hepatitis virus

<400> 230

Ala Arg Gly Gly Ala Arg Ala Ser Arg Ser Pro Ser Pro Arg Lys
1 5 10 15

<210> 231
<211> 15
<212> PRT
<213> Duck hepatitis virus

<400> 231

Arg Ala Gly Gly Ala Arg Ala Ser Arg Ser Pro Ser Pro Arg Lys
1 5 10 15

<210> 232
<211> 15
<212> PRT
<213> Duck hepatitis virus

<400> 232

Ala Ala Gly Gly Ala Arg Ala Ser Arg Ser Pro Ser Pro Arg Lys
1 5 10 15

<210> 233
<211> 19
<212> PRT
<213> Duck hepatitis virus

<400> 233

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Ser Arg Ser Pro Ser
1 5 10 15

Pro Arg Lys

<210> 234
<211> 19
<212> PRT
<213> Duck hepatitis virus

<400> 234

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Ser Arg Ser Pro Ser
1 5 10 15

Pro Arg Glu

<210> 235
<211> 18
<212> PRT
<213> Duck hepatitis virus

<400> 235

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Ser Arg Ser Ser Pro
1 5 10 15

Arg Glu

<210> 236
<211> 16
<212> PRT
<213> Duck hepatitis virus

<400> 236

Ala Ala Gly Arg Ser Gln Ser Pro Ser Ser Arg Ser Ser Pro Arg Glu
1 5 10 15

<210> 237
<211> 16
<212> PRT
<213> Duck hepatitis virus

<400> 237

Ala Ala Gly Arg Ser Pro Ser Gln Ser Ser Arg Ser Ser Pro Arg Glu
1 5 10 15

<210> 238
<211> 14
<212> PRT
<213> Duck hepatitis virus

<400> 238

Ala Ala Gly Arg Ser Gln Ser Ser Arg Ser Ser Pro Arg Glu
1 5 10

<210> 239
<211> 20
<212> PRT
<213> Tetanus toxin

<400> 239

Ile Asp Lys Ile Ser Asp Val Ser Thr Ile Val Pro Tyr Ile Gly Pro
1 5 10 15

Ala Leu Asn Ile
20

<210> 240
<211> 21
<212> PRT
<213> Tetanus toxin

<400> 240

Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser Ala
1 5 10 15

Ser His Leu Glu Gln
20

<210> 241
<211> 21
<212> PRT
<213> Tetanus toxin

<400> 241

Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser
1 5 10 15

Ala Ser His Leu Glu
20

<210> 242
<211> 14
<212> PRT
<213> Tetanus toxin

<400> 242

Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu
1 5 10

<210> 243
<211> 16
<212> PRT
<213> Tetanus toxin

<400> 243

Val Ser Ile Asp Lys Phe Arg Ile Phe Cys Lys Ala Leu Asn Pro Lys
1 5 10 15

<210> 244
<211> 16
<212> PRT
<213> Tetanus toxin

<400> 244

Leu Lys Phe Ile Ile Lys Arg Tyr Thr Pro Asn Asn Glu Ile Asp Ser
1 5 10 15

<210> 245
<211> 19
<212> PRT
<213> Diphteria toxin

<400> 245

Pro Leu Phe Ala Gly Ala Asn Tyr Ala Ala Trp Ala Val Asn Val Ala
1 5 10 15

Gln Val Ile

<210> 246
<211> 20
<212> PRT
<213> Diphteria toxin

<400> 246

Val His His Asn Thr Glu Glu Ile Val Ala Gln Ser Ile Ala Leu Ser
1 5 10 15

Ser Leu Met Val
20

<210> 247
<211> 20
<212> PRT
<213> Diphteria toxin

<400> 247

Gln Ser Ile Ala Leu Ser Ser Leu Met Val Ala Gln Ala Ile Pro Leu
1 5 10 15

Val Gly Glu Leu
20

<210> 248

<211> 20

<212> PRT

<213> Diphteria toxin

<400> 248

Gln Gly Glu Ser Gly His Asp Ile Lys Ile Thr Ala Glu Asn Thr Pro
1 5 10 15

Leu Pro Ile Ala
20

<210> 249

<211> 20

<212> PRT

<213> Diphteria toxin

<400> 249

Val Asp Ile Gly Phe Ala Ala Tyr Asn Phe Val Glu Ser Ile Ile Asn
1 5 10 15

Leu Phe Gln Val
20

<210> 250

<211> 20

<212> PRT

<213> Diphteria toxin

<400> 250

Gly Val Leu Leu Pro Thr Ile Pro Gly Lys Leu Asp Val Asn Lys Ser
1 5 10 15

Lys Thr His Ile
20

<210> 251
<211> 20
<212> PRT
<213> Plasmodium falciparum

<400> 251

Glu Tyr Leu Asn Lys Ile Gln Asn Ser Leu Ser Thr Glu Trp Ser Pro
1 5 10 15

Cys Ser Val Thr
20

<210> 252
<211> 20
<212> PRT
<213> Plasmodium falciparum

<400> 252

Asp Ile Glu Lys Lys Ile Cys Lys Met Glu Lys Cys Ser Ser Val Phe
1 5 10 15

Asn Val Val Asn
20

<210> 253
<211> 15
<212> PRT
<213> Hepatitis B virus

<400> 253

Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile Pro Gln Ser Leu Asp
1 5 10 15

<210> 254
<211> 13
<212> PRT
<213> Influenza virus

<400> 254

Pro Lys Tyr Val Lys Gln Asn Thr Leu Lys Leu Ala Thr
1 5 10

<210> 255
<211> 16
<212> PRT
<213> Influenza virus

<400> 255

Tyr Ser Gly Pro Leu Lys Ala Glu Ile Ala Gln Arg Leu Glu Asp Val
1 5 10 15

<210> 256
<211> 18
<212> PRT
<213> Measles virus
<400> 256

Lys Leu Leu Ser Leu Ile Lys Gly Val Ile Val His Arg Leu Glu Gly
1 5 10 15
Val Glu